

A Thesis Submitted for the Degree of PhD at the University of Warwick

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SUMMARY

Fiedler has claimed that leadership effectiveness is a function of:

- a) the type of leader (measured by LPC or ASO),
- b) the type of group,
- c) the type of task, and
- d) the position-power of the leader.

In Part I, evidence is presented to show that LPC/ASO scores correlate with leadership effectiveness, but not in the manner required by Fiedler's theory. The conclusions reached differ from those usually presented in the literature, and are based on a detailed, systematic description of available research. It is felt that this critique constitutes a substantial theoretical contribution, worthy of publication in its own right.

In Parts II and III, the meaning of LPC/ASO is examined. Particular attention is paid to relationships between LPC/ASO and:

- a) cognitive complexity;
- b) perceptions of leader behaviour.

Three types of evidence are presented:

- a) a critical review of existing studies (felt to be a substantial contribution to the literature);
- b) correlations between LPC/ASO and independent measures of cognitive complexity (calculated for subjects with and without leadership experience);
- c) an experimental investigation of perceptions of leader behaviour

It is concluded that:

- a) Existing interpretations of LPC/ASO are inadequate. In particular, LPC/ASO do not relate to the measures of cognitive complexity used

in this study.

- b) LPC/ASO do not appear to reflect straightforward differences in perceptions of leader behaviour.
- c) No satisfactory interpretation of LPC/ASO exists, furthermore, recent research calls into question their test-retest reliability.
- d) Fiedler's theory contains severe theoretical and methodological flaws, and lacks empirical support. It is suggested that his theory be rejected, and further research concentrate on other individual-difference variables.

A CRITICAL EVALUATION OF FIEDLER'S
PREDICTOR MEASURES OF LEADERSHIP
EFFECTIVENESS

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DECLARATION

This thesis includes work submitted for a Masters Degree. Most of this work appears in Chapter Six, or is otherwise clearly indicated.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ASO	Assumed Similarity of Opposites
CF	Contingency Hypothesis (specific) :Fiedler 1967
D	D score : high D = low ASO
DN	Descriptions of "non-preferred coworkers"
DP	Descriptions of "preferred coworkers"
EFT	Embedded Figures Test
GA	Group Atmosphere
INTRA	Intrapersonal differentiation
INTER	Interpersonal differentiation
LBDQ	Leader Behaviour Description Questionnaire
LOQ	Leadership Opinion Questionnaire
LPC	Least Preferred Coworker Questionnaire
MPC	Most Preferred Coworker Questionnaire
MRT	Modified Repertory Test
nACH	Need for Achievement
PP	Position Power
SBDQ	Supervisory Behaviour Description Questionnaire
SF	Situational Favourableness
STI	Structured Task I
TS	Task Structure

INTRODUCTION

I have seen study after study looking at leadership or manager performance or any other phenomenon where one researcher takes one variable as a moderator, another takes another variable, and so on. They use their own instruments, they use slightly different terms, and it is difficult if not impossible to go across these studies to piece together a description of where we are at the present time. (Prien, E.H., 1974, pp. 153-4)

In general, research into leadership has dealt with two major problems, one being what kind of person achieves leadership status, and the other being what factors influence leadership effectiveness.

1. WHAT KIND OF PERSON ACHIEVES LEADERSHIP STATUS?

The dominant assumption apparent in early research was that 'leaders' were persons characterized by a particular and defined set of personality traits which distinguished them from non-leaders. The results obtained from many hundreds of studies conducted to test this assumption led to the conclusion that this was not the case.

Leadership is not a matter of passive status or the mere possession of some combination of traits.
(Stogdill, 1948, p. 127)

2. WHAT FACTORS INFLUENCE LEADERSHIP EFFECTIVENESS?

Different authors have used different measures of leader behaviour. It seems that whatever the measure used, leadership effectiveness cannot be predicted on the basis of behavioural data alone (Anderson, 1959; Sales, 1966). Attempts to explain why this should be the case have focused on factors in the situation in which the leader operates. It has been suggested that these factors act as moderator variables, determining the relationship between leader behaviour and effectiveness (Vroom, 1960; Woodward, 1965; House, 1971). However, Korman (1966)

commented that:

what is needed . . . is not just recognition of this factor of 'situational determinants' but, rather, a systematic conceptualization of situational variance as it might relate to leadership behaviour, and a research program designed to test derivations from such a conceptualization so that direction might be given to the field. (Korman, ibid., p. 355)

Probably the most comprehensive and extensively researched 'situational theory' of leadership effectiveness is the one developed by Fiedler (1967).

3. FIEDLER'S CONTINGENCY HYPOTHESIS

Fiedler's theory was inductively derived from data obtained in studies with a wide variety of groups. In these studies Fiedler used an individual difference measure called 'Assumed Similarity of Opposites' (ASO). This measure was originally used in the study of 'psychological distance' between doctors and patients (see Fiedler, 1960).

ASO scores were obtained by computing difference scores between two sets of semantic differential ratings: one set being used by the leader to rate his Least Preferred Coworker (LPC), and one set being used to rate his Most Preferred Coworker (MPC). In later studies Fiedler tended to substitute a component of ASO, the LPC score, and use this score as his individual difference measure.

Both ASO and LPC scores were found to correlate with leadership effectiveness, however both positive and negative correlations were obtained.

Fiedler attempted to explain the lack of consistency in his data by means of a series of post-hoc analyses. These he reported in his 1967

book A Contingency Model of Leadership Effectiveness. In that book Fiedler argued that correlations between LPC/ASO and group effectiveness would be positive or negative, depending upon the type of group (high 'group atmosphere' versus low 'group atmosphere'), the type of task ('structured' versus 'unstructured'), and the type of leader (high 'position power' versus low 'position power'). Fiedler combined these three variables to produce eight (2x2x2) leadership situations, and argued that different correlations would be obtained depending on which of these situations the leader was operating in.

In addition, Fiedler reported that a systematic pattern of correlations was obtained when the eight situations were ordered in one particular way (see Figure 1). From here on, this pattern of correlations will be referred to as the 'contingency hypothesis', or as the contingency specified by Fiedler (CF).

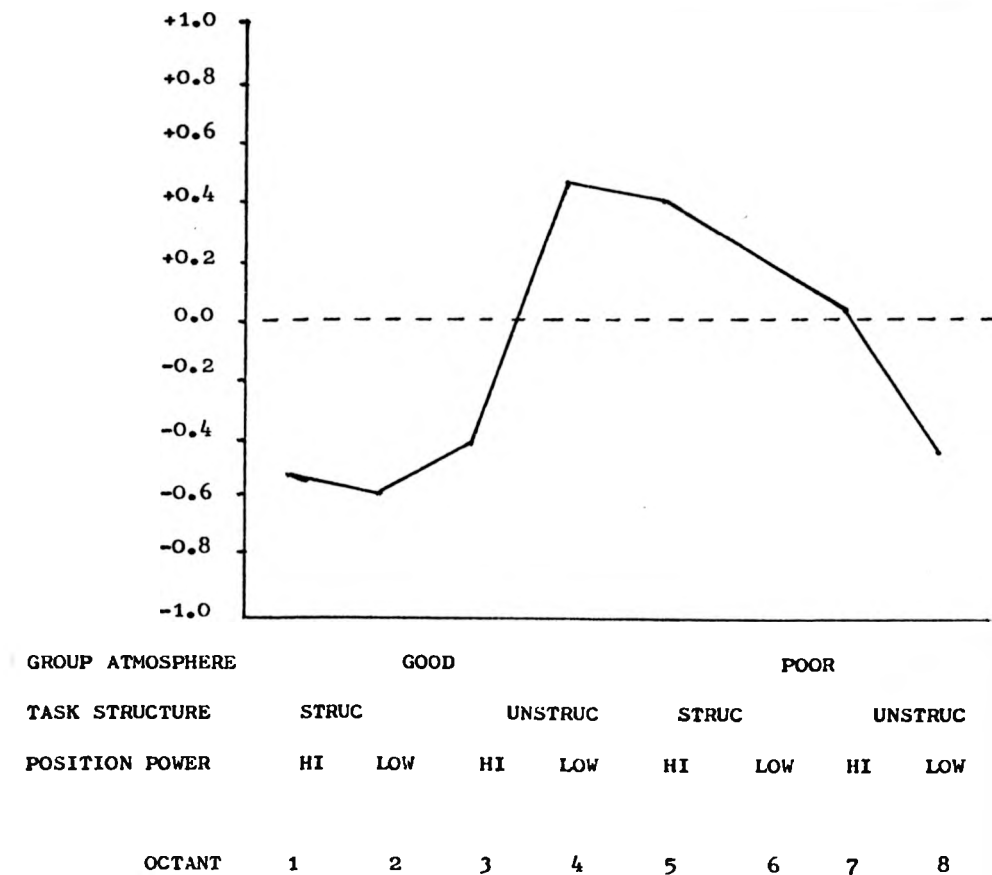
Subsequently, Fiedler has assumed his post-hoc arguments and consequent ordering of the correlations to be of 'acceptable' validity, and has therefore concentrated on providing an explanation of CF.

Whilst many authors have concluded that the contingency hypothesis (CF) does have positive validity (e.g. Mitchell et al., 1970), others have disputed this (e.g. Graen et al., 1970). In addition, the methodological issues involved in testing the validity of CF have not always been recognised (see Ashour, 1973). In consequence, the empirical evidence cited in support of the contingency hypothesis requires a thorough examination. This is provided in Part 1 of this thesis.

FIGURE 1

FIEDLERS CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS

CORRELATIONS:
LEADER LPC /ASO
AND GROUP
PERFORMANCE



NOTE: The data points are median correlations

4. PLAN OF PART 1

Chapter 1 presents a detailed statement of the contingency hypothesis in preparation for the methodological and review chapters which follow.

Chapter 2 presents a critical review of studies claimed (by their authors, or by Fiedler himself) to constitute tests of CF. The purpose of the chapter is to establish its empirical status. Should the contingency hypothesis be found to have little empirical support, a good deal of the research designed to explain it (e.g. Fiedler, 1972) would be redundant.

CHAPTER 1

THE CONCEPTS, MEASURES AND HYPOTHESES OF FIEDLER'S CONTINGENCY MODEL

1. INTRODUCTION

Fiedler's contingency hypothesis describes how correlations between certain individual difference variables (LPC, ASO) and leadership effectiveness are dependent on certain situational variables (group atmosphere, task structure and position power). However, the hypothesis does not apply to all types of group in every kind of situation. Instead the hypothesis has a defined and limited area of application. This is described in section 2 of this chapter.

Section 3 contains a description of the measurement procedures used in the operational definition of the individual and situational variables of the contingency hypothesis.

The situational variables described are used by Fiedler to define eight task situations (octants). If these are ordered in terms of the metric supplied by Fiedler (1967) a systematic pattern of correlations is apparently obtained. This does not seem to be the case if any other metric is used.

Section 4 describes the rationale which Fiedler gives for his combination and ordering of the situational variables. The methodological implications of the rationale are also discussed.

Section 5 provides a detailed statement of Fiedler's contingency hypothesis (CF: see Introduction to Part 1).

2. THE SCOPE OF FIEDLER'S HYPOTHESIS

Fiedler distinguished between 'task' groups which exist to achieve their task objectives, and 'social' groups which exist in order to further the "enjoyment or adjustment of group members" (Fiedler, 1967, p. 16). CF applies to task groups only.

In addition, Fiedler (ibid.) distinguished between different types of task group according to the nature of the relationship between the group members. This resulted in a distinction between 'interacting', 'coacting' and 'counteracting' groups (Fiedler, 1967, p. 18). In his own words:

The hallmark of the interacting group is the interdependence of group members. . . . Each man must do his part if the team is to be successful, and the group is generally rewarded as a group or else the leader alone is rewarded. (Fiedler, 1967, p. 19)

On the grounds that the interacting task group was the only type of group he had extensively investigated, Fiedler limited the range of application of the contingency hypothesis to interacting task groups.

2.1 Definition of Leadership Effectiveness

Leadership effectiveness is the dependent variable of Fiedler's model and is operationally defined in terms of the group's performance on its "primary assigned task" (Fiedler, ibid., p. 9). Fiedler selected a productivity criterion of effectiveness rather than some measure of, for example, group 'morale', group 'cohesiveness' or the group members' satisfaction with the leader. This was on the grounds that effective work group performance is usually the primary objective of the organisation.

2.2 Definition of the Leader

Fiedler has employed a functional definition of leadership; that is to say, a definition which refers to what the leader actually has to do. More precisely, Fiedler has defined the leader as the person who performs the job of "directing and coordinating task-relevant group activities" (Fiedler, 1967, p. 8).

Fiedler has assumed that, in general, if a person has been formally appointed to a leadership position, he will actually perform the functions. Consequently, in some cases Fiedler identified leaders as those given authority by the formal structure of the organisation to which they belonged. In other cases, when no formal leader had been designated, a variety of questions have been used to identify the person performing the leadership functions.

It is important to realise the limitations which may exist in Fiedler's methodology. The appointed leader may or may not be the person who actually performs the leadership role. Furthermore, different methods of identifying 'informal' or 'emergent' leaders may lead to different findings (Cattell and Stice, 1954).

3. DIMENSIONS OF THE MODEL

3.1 The Individual Difference Variables LPC and ASO

The individual difference variable of the model was originally operationalised by the use of a measure called 'Assumed Similarity of Opposites' (ASO). This measure was first developed and used in a clinical

context and was interpreted as reflecting the degree of 'psychological distance' (Fiedler, 1960). Individual's ASO scores were obtained by comparing their evaluations of their 'most preferred coworker' (MPC) and their 'least preferred coworker' (LPC). These evaluations were obtained on separate check lists each containing the same lists of adjectives. The form of the scales followed Osgood's semantic-differential (Osgood *et al.*, 1957). Each list contained task-related and interpersonal-related adjective pairs. The total number of scales in each list has varied from 16 to 24 according to the study concerned. Furthermore, the number of adjectives in each set (task and interpersonal) has varied from case to case.

Respondents are required to rate MPC and LPC targets, using eight-point semantic differential scales. For example:

	:	:	:	:	:	:	:	
Pleasant	<hr/>							Unpleasant
	8	7	6	5	4	3	2 1	

	:	:	:	:	:	:	:	
Efficient	<hr/>							Inefficient
	8	7	6	5	4	3	2 1	

An individual's LPC (and likewise his MPC) score is obtained by summing the set of scores obtained. Since the score of 8 is attributed to the most favourable pole of the adjective pairs, high LPC and MPC scores indicate that the respondent has described his coworkers in relatively favourable terms.

The ASO score is obtained by calculating the value of Cronbach's D statistic (Cronbach, 1949). First, the ratings given to the LPC are subtracted from those given to the MPC on the corresponding scales. The difference scores are then squared and summed. Finally,

the square-root of the resultant is obtained, this being the value of D. A high D score indicates a low assumed similarity of opposites (ASO), in other words, the respondent sees his MPC and LPC as being dissimilar.

Prior to 1963, Fiedler usually used ASO as the individual difference measure. Since then he has tended to obtain LPC scores only and used these instead of ASO. Fiedler has adopted this practice for two reasons: one empirical and one practical. First, LPC and ASO have been found to be highly correlated (Fiedler, 1967, p. 44); and second, LPC scores are administratively more simple to obtain.

Whilst LPC and ASO have been found to correlate significantly with leadership effectiveness (Fiedler, ibid.), they do not do so for any known and simple reason. Neither LPC nor ASO show any direct relationship with measures of leader behaviour, nor do they seem to reflect any other defined and measurable individual difference variable (Fiedler, ibid.). Chapters 4 and 5 of this thesis contain a review of the various explanations of the meaning of LPC and ASO, and the empirical evidence which has been obtained in attempts to validate them.

3.2 The Situational Variables

Fiedler (1967) reported three variables as being major determinants of the relationship between LPC (and ASO) and leadership effectiveness. These were: 'position power' (PP), 'task structure' (TS), and 'group atmosphere' (GA).

Position power was defined as:

the degree to which the position itself enables the leader to get his group members to comply with and accept his

direction and leadership. . . . It is thus the potential power which the organization provides for the leader's use. (Fiedler, 1967, p. 23)

Fiedler (1967) operationalized position power by means of an 18 item check list with which judges were to rate the situation. The check list contained items covering issues such as whether or not the leader has power to hire or fire; special knowledge about the job; power to reward or punish; etc.

Task structure was conceptualized in terms of the extent to which the group's task is routine/predictable. Where the group's task is relatively unstructured, as is the case, for example, in devising fund-raising campaigns (Fiedler et al., 1961), the leader is seen as being unable to utilise the power of his organisational position. This is because the nature of the task reduces the leader's opportunity to influence the work methods of the group.

Examples of highly structured tasks would be tasks performed by bomber crews (Fiedler, 1955), and bridge-building (Julian et al., 1964). In the case of such tasks, Fiedler (1967) argued that the organisation is able to provide specific instructions on standard operating procedures. This, argued Fiedler, not only enables the leader to direct the behaviour of group members, but also allows him to evaluate performance and correct deviations from standard.

When viewed in this light, the nature of the task determines leader influence to a considerable extent. The structured task is, in effect, one way of influencing member behaviour by means of the organizational sanctions which can be imposed and it reinforces position power. (Fiedler, ibid., p. 27)

The measure of task structure reported by Fiedler (1967, p. 28) was based on four of the dimensions identified by Shaw (1963). These were: decision

verifiability, goal clarity, goal-path multiplicity, and solution specificity. Judges are required to rate each dimension on an eight-point scale.

Group atmosphere was conceptualized by Fiedler as being concerned with the extent to which the leader is personally liked and esteemed by his group members. GA deals with the personal power (rather than the position power) of the leader and reflects the extent to which the leader is felt to be, or feels himself to be, accepted by the group.

In operationalizing this variable, Fiedler has used one of two methods depending on whether the group being investigated was in existence prior to the study ('ongoing') or constructed solely for the purpose of the investigation ('ad hoc'). In the case of ongoing groups, Fiedler has usually used sociometric preference ratings from group members, of "the degree to which the leader would be chosen under various conditions" (Fiedler, 1967, p. 31). In ad hoc groups the leader's rating of GA has usually been used. The leader is asked to rate the group on a set of ten semantic differential scales (see Fiedler, 1967, pp. 32 and 116). The ratings are then summed to obtain a total score, indicating "the degree to which the leader feels accepted by the group, and relaxed and at ease in his role" (Fiedler, 1967, p. 32).

4. THE SITUATIONAL MEASURES AND 'SITUATIONAL FAVOURABLENESS'

Fiedler deemed each of the three situational variables to be important in determining the extent to which the leader was capable of performing his job. He therefore combined them to obtain one dimension of 'situational favourableness'. Fiedler viewed this dimension as

reflecting the amount of influence the leader has over group behaviour. The situational favourableness (SF) dimension was conceptualized as varying from situations highly 'favourable' for the leader, that is, situations where he has high influence; to situations 'unfavourable' for the leader where he has little influence over group behaviour.

Since three variables (GA, TS and PP) are combined to define one dimension (SF), a rationale is implied as a basis for combining and ordering the variables.

Fiedler combined the variables by stratifying GA, PP and TS into two levels, high and low, and combining each level with each. This resulted in an eight-celled classification of group task situations (see Table 1). The use of this technique raises the question of the criterion levels at which the variables were dichotomized. Korman (1971) stated a requirement of contingency theorizing to be the specification of criterion levels or 'critical values'. When values are not specified, the levels of the variables may be defined differently in different studies (Ashour, 1973).

In response to the above comment, Fiedler (1973, p. 364) claimed that both Fiedler (1967) and Posthuma (1970) had specified the critical values defining the levels of the situational variables. Fiedler further claimed that these critical levels were used in a study by Csoka and Fiedler. However, Fiedler (1967) did not cite all the criterion levels; the report by Posthuma is unpublished, and the criterion score for GA was the only one cited in the Csoka and Fiedler paper (ibid.). More importantly, even if the criterion levels were published they have seldom been used by Fiedler. Instead, he has used the sample median to stratify

sample scores into high and low. Since the median score of a sample is likely to vary from sample to sample, definitions of the levels of each of the situational variables are likely to have varied. This has indeed been the case, not only in the studies upon which the model was based (see Fiedler, 1967, pp. 134-41), but also in the studies claimed as tests of the model (see Table 67, Appendix A).

When Fiedler's eight task situations are ordered as drawn in Table 1, he assumes they form an ordinal scale of situational favourableness. The rationale for the metric is as follows. Fiedler assumed that group atmosphere would be:

the most decisive in determining the favourableness of the situation for the leader. A leader who is liked, accepted, and trusted by his members will find it easy to make his influence felt.

Therefore all situations having a good group atmosphere were organised at the favourable end of the continuum (see Table 1). Task structure was considered to be the next most important factor affecting the leader's degree of influence. This was because:

in effect, by structuring the task the organization is able to provide the leader with power, irrespective of the power of the position which he may occupy.

Therefore in situations where the group atmosphere is good and/or the task is well structured, position power is to a certain extent unnecessary.

These arguments cannot, of course, be regarded as decisive and it is important to realise that much less systematic results are obtained if different metrics are used.

5. FIEDLER'S CONTINGENCY HYPOTHESIS DEFINED

The contingency hypothesis was arrived at by the development of the taxonomy of group task situations depicted in Table 1. Having categorised the situations, and ordered them according to a post-hoc rationale, the correlations between leaders' LPC scores (or ASO) and group effectiveness were plotted. This was done with the data obtained prior to 1963, and resulted in a bow-shaped curve (see Figure 1). This

TABLE 1
TAXONOMY OF GROUP TASK SITUATIONS

Group Atmosphere		Good		Poor	
Task Structure		High	Low	High	Low
Position Power		High Low	High Low	High Low	High Low

High ← ————— Favourableness ————— → Low
(Potential influence)

curve indicated that low LPC/ASO leaders were most effective in situations which were 'highly favourable' or 'relatively unfavourable', whereas high LPC/ASO leaders were most effective in situations which were (assumed to be) intermediate in favourableness. Fiedler (1967) regarded these findings as demonstrating that situational favourableness moderates the relationship between LPC (or ASO) and leadership effectiveness, resulting in a non-linear relationship. However, it is important to appreciate that this is Fiedler's explanation of the contingency rather than a

description of it. All that can be claimed is that the data (shown in Figure 1) show that different, defined situations moderate the relationship between LPC(ASO) and leadership effectiveness so that in some situations low LPC leaders are more effective than high, and in other situations the reverse is true.

If the findings depicted in Figure 1 are found to be valid, they require explaining. Fiedler's explanation in terms of situational favourableness, power and influence, is just one possible explanation, and requires validating separately from the contingency graph.

Fiedler has been careful to point out that the basic hypothesis of the contingency model is not tied to the definition of situational favourableness in terms of GA, PP and TS.

The hypothesis merely states that the . . . (low LPC) leaders will perform more effectively under very favourable and very unfavourable conditions, while the . . . (high LPC) leaders will perform more effectively under conditions intermediate in favourableness. (Fiedler, 1967, p. 169)

The above hypothesis has since been identified as being the "more general hypothesis" derived from the contingency model (Fiedler, 1971, p. 141; Mitchell et al., 1970, p. 261). In Fiedler's words, this general hypothesis allows for the possibility that

other aspects of the group situation . . . contribute to its favourableness, and that one factor may be completely overshadowed in importance by another in a particular situation. (Fiedler, 1967, p. 169)

In consequence, any operationalization of the situational dimension may be employed in testing this hypothesis, as long as the operationalization results in a dimension of favourableness in the sense of the amount of influence the leader possesses over group behaviour (see p.).

In addition to deriving this 'general' hypothesis, Fiedler derived a more specific hypothesis which was tied to the methodology discussed earlier in this chapter. In reviewing validation studies of the contingency hypothesis, Fiedler (1971) separately discussed the empirical data for each of these two hypotheses. With respect to the more specific hypothesis, Fiedler stated that

studies that do not conform to the explicit methodology of the earlier work cannot be used as exact tests of the model. (Fiedler, 1971, p. 132)

He continued by saying that differences in method presented difficulties

only where the investigator and this reviewer (i.e., Fiedler) disagree on the appropriateness of a study for testing the contingency model, or where the methodology is inadequate to test the model. (Ibid., p. 132)

However, problems arise in judging whether or not a study constitutes an 'appropriate' test of the model. This is because Fiedler (1971) cited in support of the more specific hypothesis data obtained in studies which in fact did depart from the 'explicit methodology' of the earlier work (ibid.). For example, the studies by Shima, 1968; Hunt, 1967; and Fiedler, O'Brien and Ilgen, 1969, all departed, either by using other measures, and/or assuming the status of the variables a priori (see Table 67, Appendix A). In fact, since no study has utilised all the operationalizations as specified by Fiedler (1967) (see Table 67), the "more specific hypothesis" involving a clearly defined model has never been tested.

In support of the "more general hypothesis" Fiedler (1971) cited both published and unpublished studies (see Table 67, Appendix A) Fiedler (ibid.) claimed that these studies showed SF to moderate the relationship between LPC(ASO) and leadership effectiveness. But no

comprehensive theory of situational favourableness is available. In addition, there are no empirical data showing different, defined, situations to correspond to different levels of potential influence. Therefore it may be necessary to conclude that each unique operationalization of the situational variables implies a correspondingly unique model.

A crucial problem is that because the predicted relationship (between LPC and SF) is non-linear, it is essential that a universal metric is available for defining different levels of SF. Until this is available, the "more general hypothesis" is untestable. Whilst Fiedler cited a number of studies in support of his more general hypothesis (see Table 2), the results of these studies only allow one to conclude that certain aspects of situations in which leaders are required to function moderate the relationship between LPC and leadership effectiveness. As was the case with the more specific hypothesis, a distinction must be drawn between the contingency (or contingencies) observed and Fiedler's explanation of it (or them). The conclusion that aspects of the leadership situation moderate the relationship between LPC(ASO) and effectiveness is not a startling one, and not necessarily a valid one since none of the studies reported by Fiedler (1971) have been replicated. However, the conclusion is radically different from the conclusion drawn by Fiedler (1971) that situational favourableness moderates the relationship between LPC and effectiveness.

One more departure from the model as stated by Fiedler (1967) may be noticed in the literature. This is in the use of 'coacting' rather than 'interacting' groups (see p. 6). Since the contingency model was originally stated with respect to interacting groups only, studies in

TABLE 2

FIEDLER 1971: CLASSIFICATION OF STUDIES ACCORDING TO WHETHER THEY TESTED THE "SPECIFIC HYPOTHESIS" OR THE "MORE GENERAL HYPOTHESIS", OR UNCLASSIFIABLE

Validation Evidence: Specific Hypothesis		Validation Evidence: General Hypothesis		Unclassifiable	
Hunt	1967	Shaw and		Graen et al.	1971
Hill	1969	Blum	1966	Rielly	(unpub)
Fiedler et al.	1969	O'Brien	1969	Nealey and	
O'Brien et al.	(unpub)	Anderson	1966	Shiflett	(unpub)
Fiedler	1966	Lawrence and		Butterfield	1968
Shima	1968	Lorsch	1967	Kretzschmar	
Mitchell	(unpub)	Nealey and		and Luecke	1969
Chemers and		Blood	1968		
Skrzypek	1972*	Fiedler and			
Fiedler (exec)**		Barron	1967		

*This paper was unpublished when Fiedler cited it.

**The details of this reference were not provided.

which coacting groups were observed cannot be claimed as tests of the contingency hypothesis. Fiedler (1971) seems to have used something of a dual standard here by regarding such studies as extensions of the contingency model, and in addition claiming that the findings of such studies conform to its predictions. It seems of dubious validity to claim such studies in support of the contingency hypotheses. They should more properly be regarded only as extensions of the contingency model, and then only if Fiedler's situational measures were used.

6. SUMMARY OF MAIN POINTS

First the scope of the model was defined, and was seen to be restricted to interacting task groups where the leader's function is to "direct and coordinate", and where the leader's effectiveness is evaluated according to a production criterion.

Next the individual difference variables and the situational variables were described in terms of their measurement and conceptualization.

It was then shown how Fiedler arrived at his continuum of 'situational favourableness' by combining and ordering two levels of each of the three situational variables. It was pointed out that Fiedler's practice of stratifying the situational measures at the sample median resulted in the levels of the variables being differently defined in different studies.

Fiedler's rationale for ordering the situations into a 'continuum of favourableness for the leader' was then presented. The contingency was then described, and the distinction drawn between the nature of the pre-1963 findings (the contingency) and Fiedler's explanation of them (the contingency model).

It was pointed out that Fiedler had in fact stated two contingency hypotheses, one supposedly tied to the methodology described by Fiedler (1967), that is GA, PP and TS; and the other stated in the more general terms of 'situational favourableness' (however defined). It was argued that the first hypothesis has never been tested, and that the second is untestable.

Finally it was argued that data obtained from studies involving 'coacting' groups cannot be claimed in support of the contingency hypothesis.

CHAPTER 2

VALIDATION STUDIES OF THE CONTINGENCY HYPOTHESES

1. INTRODUCTION

In 1971 Fiedler published a paper reviewing tests of his contingency hypotheses. The purpose of this chapter is to examine these tests in the light of the methodological comments made in Chapter 1.

Other reviews of this literature have been published (e.g. Mitchell et al., 1970; Graen et al., 1970), but the relevant research has not been described in detail, and many of the studies have escaped critical analysis.

Detailed summaries of the studies cited by Fiedler (1971) are provided in Table 67 (Appendix A). Whilst the majority were specifically designed to test the contingency hypotheses, the remainder were not. Instead, the reader is forced to rely on Fiedler's own post-hoc analyses.

Furthermore, the hypotheses have been tested in different ways in a variety of contexts. Some formal classification of the procedure involved is therefore a pre-requisite for any serious discussion of the evidence cited in support of Fiedler's position.

Several dimensions might be used to organize the literature:

1.1 Experienced Leaders vs. Inexperienced Leaders

Over half of the studies have used students (mostly American) as subjects. Only three studies dealt exclusively with experienced leaders (Hunt, 1967; Hill, 1969; Nealey and Blood, 1968). Whilst some of the

students may have had experience in working as leaders, it seems unwise to assume that experienced and inexperienced subjects obtained the same results for the same reasons.

1.2 Existing Work Groups vs. ad hoc 'Groups'

Only three of the studies involved leaders of existing work groups (Fiedler, 1966; Hill, 1969; Hunt, 1967). The remainder used ad hoc 'groups' of strangers assembled specially for the purpose of the investigation, with a 'leader' assigned by the experimenter. Whilst the latter studies allowed controlled manipulation of some of the experimental variables, it is important to note that this may be at the cost of reduced external validity. Leadership is a group phenomenon and groups are more than mere collections of individuals (Herbst, 1970).

1.3 Studies Testing All Eight Cells vs. Studies Testing Less Than Eight

Only three studies have included all of the octants within the same research design (Fiedler, 1966; Graen et al., 1971; Chemers and Skryzpek, 1972). Typically only one or two octants have been included in a given study. Consequently, the attempt to test Fiedler's model has often involved combining data collected from different research sites by a number of different procedures. This makes interpretation of the aggregate data rather difficult, since the theory may hold under some, but not all, of the conditions involved. The studies of Fiedler (1966), Graen et al. (1971), and Chemers and Skryzpek (1972) may, therefore, be regarded as especially important in any discussion of the tests of Fiedler's contingency hypotheses.

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1.4 Use of ASO Scores vs. Use of LPC Scores

Whilst the majority of the pre-validation studies measured the individual difference variable using ASO, most of the validation studies have used LPC. Indeed, the study by Shima (1968) seems to be the only test of Fiedler's hypothesis which used ASO scores. Substituting LPC for ASO may, however, be premature. The fact that the two measures have been found to correlate highly (Fiedler, 1967, p.44) does not necessarily mean that they will relate in the same way to other important variables.

1.5 Conceptual and Operational Definitions of the Leadership Situations

Some of the studies conceptualized the situational aspect of the contingency in terms of group atmosphere, task structure, and position power (e.g. Hunt, 1967), whilst other studies conceptualized leadership situations using variables such as 'environmental stress' (Fiedler et al., 1969).

Furthermore, whilst some authors followed Fiedler's conceptualization of 'situational favourableness' in terms of GA, TS, and PP, they measured these variables using measures other than those described by Fiedler (1967). (See for example Hill, 1969.)

Research studies can therefore be located in a two-dimensional framework according to the way 'situational favourableness' is (a) conceptualized and (b) measured. This sort of taxonomy will be used in this chapter.

2. A FORMAL CLASSIFICATION OF VALIDATION STUDIES

Table 3 shows how studies may be classified as one of five types, according to the way in which 'situational favourableness' (SF) is con-

ceptualized (in terms of GA, TS, PP or in terms of some other variables) and measured (using Fiedler's measures, other measures, or no measures at all).

A classification scheme of this sort is useful because it demonstrates the number of assumptions required to regard each study as a test of Fiedler's theory.

TABLE 3
CLASSIFICATION OF VALIDATION STUDIES

		CONCEPTUAL LEVEL	
		GA, TS and PP	Others
OPERATIONAL LEVEL	Fiedler's Measures	Type 1	X
	Other Measures	Type 2	Type 4
	No Measures	Type 3	Type 5

Studies of type 1 conceptualize situational favourableness in terms of GA, TS and PP, and in addition measure these variables using Fiedler's scales. The results of such studies are relatively easy to evaluate since, all other things being equal, Fiedler's hypothesis can be seen to have been tested. However, moving in sequence from studies of type 1 to studies of type 5, more and more assumptions are required in order to relate the study concerned to Fiedler's CF. In the most extreme case, studies of type 5 extend Fiedler's (1967) definition of SF, assume that SF is affected by certain experimental manipulations, but make no measurements of the range of variation involved. Any claim that such studies constitute adequate tests of the CF rests on numerous assumptions of unknown validity.

Of the validation studies reviewed by Fiedler, 1971 (see table 2 page 18), some have been classified according to type in Table 4. The remainder have been left out, either because they are unpublished, and therefore not available for critical appraisal; or because Fiedler performed his own post-hoc analyses on data which was not presented in the published articles (eg., Fiedler and Barron, Anderson, Rielly).

The remainder of this chapter consists of descriptions and critical evaluations of the studies classified in Table 4.

TABLE 4
VALIDATION STUDIES CLASSIFIED ACCORDING TO TYPE

	CONCEPTUAL LEVEL	
	GA, TS and PP	Others
Fiedler's Measures	None	X
Other Measures	Hunt, 1967; Hill, 1969	Fiedler, O'Brien and Ilgen, 1969; O'Brien, 1969; Kretzschmar and Luecke, 1969
OPERATIONAL LEVEL		
No Measures	Fiedler, 1966; Shima, 1968; Graen et al., 1971; Chemers and Skryzpek, 1972; Shaw and Blum, 1966	Nealey and Blood, 1968

3. DESCRIPTION AND ANALYSIS OF TYPE 1 STUDIES

Studies which conceptualized the leader's situation in terms of GA, TS and PP, and which also measured these variables using the operational techniques described by Fiedler (1967), would constitute exact tests of the specific contingency hypothesis (see page 16). No such

study has been conducted. Instead, researchers have manipulated and/or observed the situational variables and assumed their status a priori. Alternatively, measures other than those described by Fiedler (1967) have been used. Such studies are therefore classified as being types 2, 3, 4, or 5.

4. DESCRIPTION AND ANALYSIS OF TYPE 2 STUDIES

Two studies of type 2 have been conducted: by Hunt (1967) and Hill (1969). This research is important because there are no other studies which have formally measured every variable (individual and situational) referred to in Fiedler's specific hypothesis. In consequence, when compared with other validation studies, the studies by Hunt and Hill require fewer assumptions when coming to conclusions about their adequacy as tests of the CF.

The studies by Hunt and Hill differed in the precise details of their methodology, but each used measures of GA, TS, and PP developed by Hunt (and based on those of Fiedler, 1967).

GA scores were obtained from the group leaders using a 10-item list of semantic differentials. Some of the items had previously been used by Fiedler (1967). Hunt effected the situational classification of 'good' and 'poor' GA by stratifying the distribution of scores at the sample median. Hill defined the two levels of GA by using the upper and lower thirds of his sample distribution.

PP was defined by the use of a 13-item checklist similar to that used by Fiedler (1964). An official 'familiar with company policy' was requested to indicate, by the use of yes/no responses, whether or not the items applied to the leaders concerned. Questions such as whether or not

the leader could 'punish', 'reward', or promote on his own authority were asked. In Hunt's study, all the scores were found to be above the 75th percentile of the theoretical distribution. All the leaders were therefore judged to have high position power. Hill provided no information on his operational definitions of high and low PP.

The measure of TS was based on Shaw's (1963) dimensions of goal clarity, goal-path multiplicity, decision verifiability, and solution specificity. As in the case of GA, Hunt's measure differed in exact content from that reported by Fiedler (1967), which was also based on Shaw's dimensions. In order to distinguish between structured and unstructured tasks, Hunt used the midpoint of his scale. Hill provided no information on how he defined the two levels of structure.

Two points are worthy of further comment:

- (a) Hunt, Hill, and Fiedler used different scales to measure GA, TS, and PP. If the studies of Hunt and Hill are to be regarded as tests of Fiedler's contingency hypothesis it must, therefore, be assumed that the appropriate measures are positively correlated. Neither Hunt nor Hill present any evidence of this. Therefore the only means by which the assumption may be assessed is by examining the similarity in the content of the various scales. Whilst there are some grounds for optimism it is unfortunate that the relevant correlational studies are not available.
- (b) Both Fiedler and Hunt used sample statistics of one sort or another (e.g. median, 75th percentile, etc.) to define different levels of GA, TS, and PP. Hill used a sample statistic to define levels of GA (namely the upper and lower thirds of his distribution). If the studies of Hunt and Hill are to be regarded as tests of Fiedler's hypothesis we must also assume that similar levels of GA, TS, and PP were measured, or

that the variation in the levels was small and not critical.

4.1 Hunt's (1967) Study

Hunt conducted a field study involving five sets of work groups in three American organizations. He obtained data from both coacting and interacting groups (see page 6). Since Fiedler's hypothesis was stated with respect to interacting groups, only these data will be reviewed.

In order to predict leadership effectiveness LPC scores were obtained. No information was given on what constituted high and low LPC.

In order to evaluate leadership effectiveness the company's own measures were used. These were sales per man hour; standard time expressed as a percentage of actual time; and various performance ratings. As in most field studies, the measure used depended on the work group concerned.

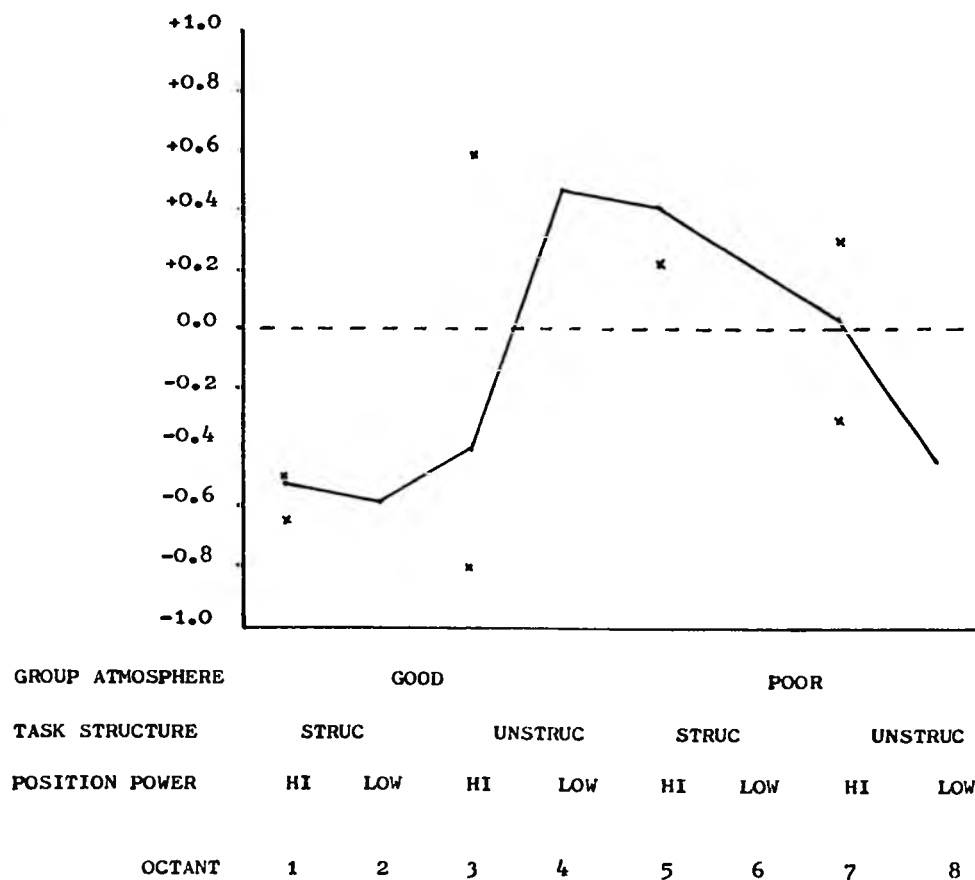
Correlations between LPC scores and the performance measures were calculated for octants 1, 3, 5, and 7. Individually, the correlations did not differ significantly from zero (using one-tailed tests). However, when the probabilities for each of the separate samples were combined within octants (using the method described on page 270) the combined probability was found to be significant at the .05 level. The results of the latter analysis, plus the observed trends in the data, led Hunt to conclude support for the contingency hypothesis.

The use of a combined significance test can be criticized on the grounds that it obscures the differences between octants (see Appendix B). This is demonstrated by the data in Figure 2 which show that the contingency hypothesis was supported only in octant 1, where both the corre-

FIGURE 2

HUNT 1967: TEST OF FIEDLER'S CONTINGENCY HYPOTHESIS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



NOTE: The crosses represent the correlations obtained by Hunt

lations were large (-.64 and -.51) and in the same direction.

4.2 Hill's (1969) Study

Hill's study was conducted in a large electronics firm in the United States. The subjects of the study were engineering groups and their supervisors plus assembly groups and their instructors.

The predictor measure of leadership effectiveness was the LPC scale. As with Hunt, no information was provided on what constituted high and low LPC scores.

In order to measure leadership effectiveness, Hill obtained managers' ratings of the leader's job performance. However, Fiedler (1967) measured effectiveness by evaluating the group's performance on its primary task. Although Fiedler (1967) regarded these two methods as measuring the same thing, this is clearly an empirical question. Only if the managers evaluated the leader's performance solely in terms of his group's effectiveness could Hill's measure be regarded as comparable with Fiedler's.

Correlations were computed between leader LPC scores and effectiveness in octants 2, 3, 6* and 7. None of the coefficients were statistically significant.

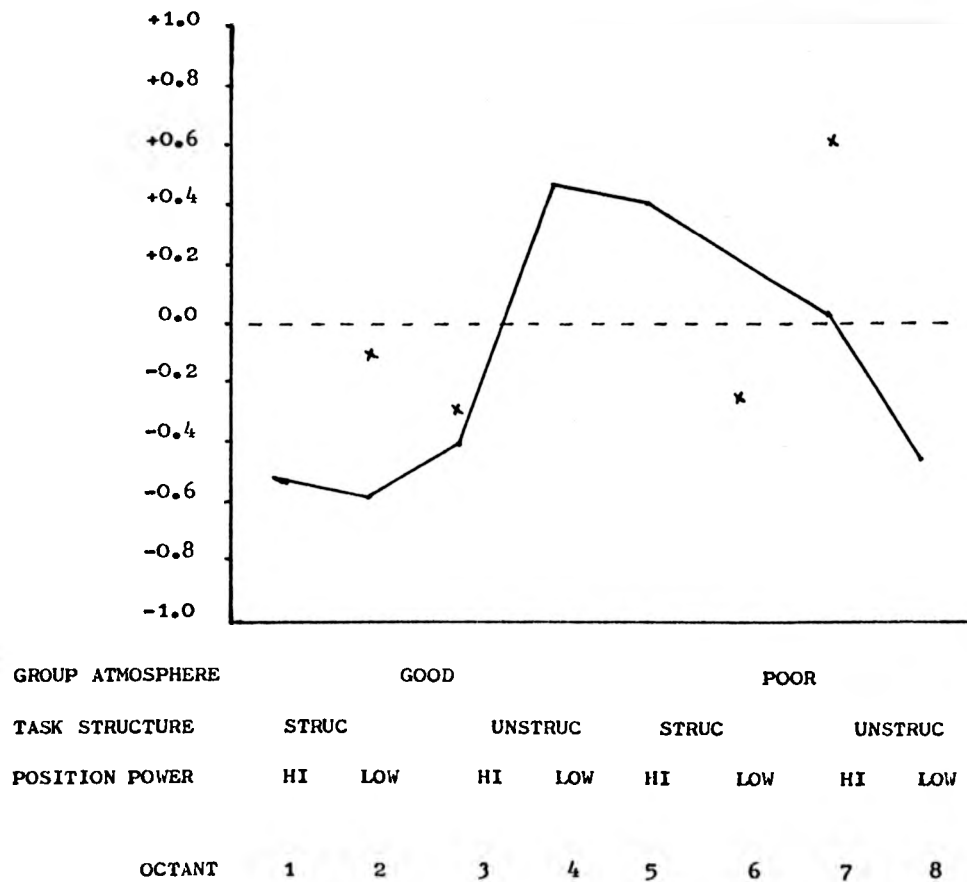
Hill concluded that his results supported the contingency hypothesis. This conclusion would seem to be based on the fact that the correlations in octants 2, 3, and 7 were in the predicted direction (see Figure 3). However, the correlations in octants 2 and 3 were small and non-significant.

*Not octant 4 as stated by Fiedler (1971) page 133.

FIGURE 3

HILL 1967: TEST OF FIEDLER'S CONTINGENCY HYPOTHESIS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



NOTE: The crosses represent the correlation obtained by Hill

The Correlation in octant 7, whilst in the predicted direction, differed considerably from the point prediction based on the pre-validation data (see Appendix B) To regard the obtained correlation as providing support for the hypothesis (simply on the basis that it is in the predicted direction) is generous, to say the least.

So far as octant 6 is concerned, Hill provided new data. In the absence of data for this octant, Fiedler extrapolated the contingency graph from octant 5 to octant 7. If Hill's study is accepted as a valid test, his data suggest that Fiedler's extrapolation may be invalid.

4.3 Discussion of Type 2 Studies

Whilst the studies by Hunt and Hill are the most direct tests of Fiedler's CF, they provide it with little empirical support. In octants 2 and 5 the correlations were in the predicted direction, but were small and non-significant. The octant 6 correlation was small and negative. In octants 3 and 7 the correlations were larger (e.g. +62, -8) but varied from positive to negative within each octant. Only in octant 1 were the correlations both large and in the predicted direction (but non-significant).

It is concluded that these data fail to support Fiedler's CF. However, Hunt's data suggest a contingency between LPC, situational variables and effectiveness inasmuch as high and low LPC persons do appear to differ in their relative effectiveness in octant 1, but not in other situations.

5. DESCRIPTION AND ANALYSIS OF TYPE 3 STUDIES

Four studies are of type 3: Fiedler (1966); Chemers and Skryzpek (1972); Graen, Orris and Alvares (1970); and Shima (1968). With the exception of the study by Shima, each of these studies tested all the octants.

These studies are characterized by the fact that in each at least one of the situational variables was manipulated. This was done in a variety of ways. In general, position power was manipulated by the use of different instructions to groups and leaders, whilst task structure was manipulated by the assignment of different tasks. Of these four studies, the only attempt to manipulate group atmosphere was by Chemers and Skryzpek. More usually, GA was measured by the use of a set of semantic differentials administered after task completion.

These studies are also characterized by the use of ad hoc groups and student subjects. Only in the study by Fiedler did any of the leaders occupy a leadership position outside the laboratory. Instead, leaders were randomly assigned to groups, or assigned on the basis of their LPC score (Graen et al., 1971; Fiedler, 1966; Chemers and Skryzpek, 1972). In the study by Shima, the leader was elected by the group members.

5.1 Fiedler's (1966) 'Belgian Navy' Study

Fiedler (1966) conducted an experimental study with members of the Belgian Navy. It involved 96 three-man groups of French- and Dutch-speaking petty officers (N=48) and recruits (N=240).

Fiedler constructed the groups so that half were culturally and linguistically homogeneous and the remainder were not. In his review of validation studies, Fiedler (1971) argued that only data from the homogeneous groups could be treated as validation evidence.

Since the contingency model . . . was based on culturally homogeneous groups, that is, groups in which all members had the same mother tongue, only these will be used for validation purposes . . . (Fiedler, 1971:135)

GA was measured by the use of questionnaires administered after task performance. These were completed by both leaders and group members and

included the group atmosphere scale described on page 11)

PP was assumed to have been manipulated by the assignment of either petty officers (high PP) or recent recruits (low PP) as group leaders. Since PP was not formally measured, the adequacy of the manipulation can only be assessed by face validity. This seems relatively high, although it is important to note that this sort of manipulation confounds the effects of position-power with the effects of leadership experience.

TS was assumed to be manipulated by the use of three experimental tasks: two of these being defined a priori as structured, and one as unstructured. However, when Fiedler analysed these data for validation purposes, he scored only two of the three tasks: one structured, and the other 'relatively unstructured' (see Fiedler, 1971: page 135). The structured task required the groups to find the shortest route for a ship through a number of ports. Errors such as running out of fuel, omitting a port, etc. were identified and converted into 'added appropriate mileage as correction and penalty' (Fiedler, 1966: page 243). Group performance was assessed in terms of corrected mileage round the course.

In the unstructured task, the groups were required to write a letter designed to urge others to join the Belgian Navy. The group's performance was assessed by judges who rated the letters on five criteria. These included: 'well' versus 'poorly' written; 'interesting versus boring'; and 'creative versus commonplace' (Fiedler, 1966: page 242).

Fiedler (1966) reported correlations between leader LPC scores and group performance on all three tasks. On the grounds that he found the two structured tasks to be uncorrelated, Fiedler computed two separate correlations, one for each structured task. This resulted in two correlations being plotted in each of the structured octants,

and one correlation in each of the unstructured octants. In addition, two different orders of task presentation were used, LPC/performance correlations being calculated for each task order. This resulted in four correlations in each of the structured octants, and two in each of the unstructured octants (see Figures 4 and 5). These data are randomly distributed and provide no support for the contingency hypotheses.

However, Fiedler (1966) did not present the data as they are presented in Figures 4,5. Instead he argued that the second of the structured tasks was a 'methodologically better measure of group performance' (p.243). His argument was based on three features of the groups' performance on the first structured task (STI):

- (a) nine of the groups obtained a perfect score;
- (b) more groups made more errors than on the other structured task; and
- (c) the higher error-rate was due to the groups failing to follow the instructions.

Given these features of the groups' performance, Fiedler dropped the STI data from his analyses. This left two correlations in each octant: one for each task order (see above). Fiedler then calculated the median correlation in each octant, resulting in the graph shown in Figure 6.

Fiedler's rejection of one of the 'structured' tasks, and his practice of plotting the median correlations, resulted in an appreciable reduction in the variation of the correlations (see Figure 6). However, he felt unable to conclude support for his hypotheses. He commented that the plot was 'curvilinear', but that 'the point by point correspondence /was/ far from satisfactory' (Fiedler, 1966: page 255).

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- (c) the higher error-rate was due to the groups failing to follow the instructions.

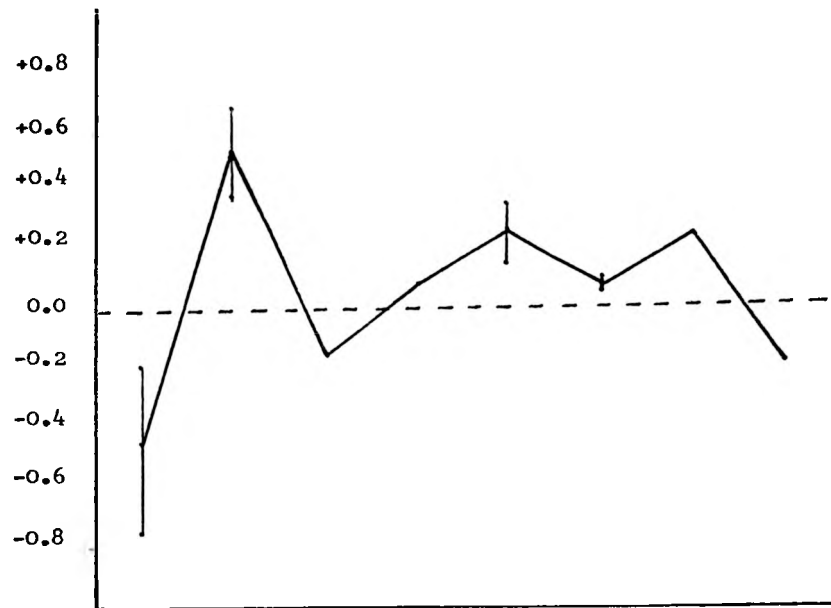
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FIGURE 4

FIEDLER 1966: LPC/PERFORMANCE CORRELATIONS ON TWO STRUCTURED AND ONE
UNSTRUCTURED TASK: SEQUENCE BEGINNING WITH THE UNSTRUCTURED.

CORRELATIONS
 LEADER LPC
 AND GROUP
 PERFORMANCE



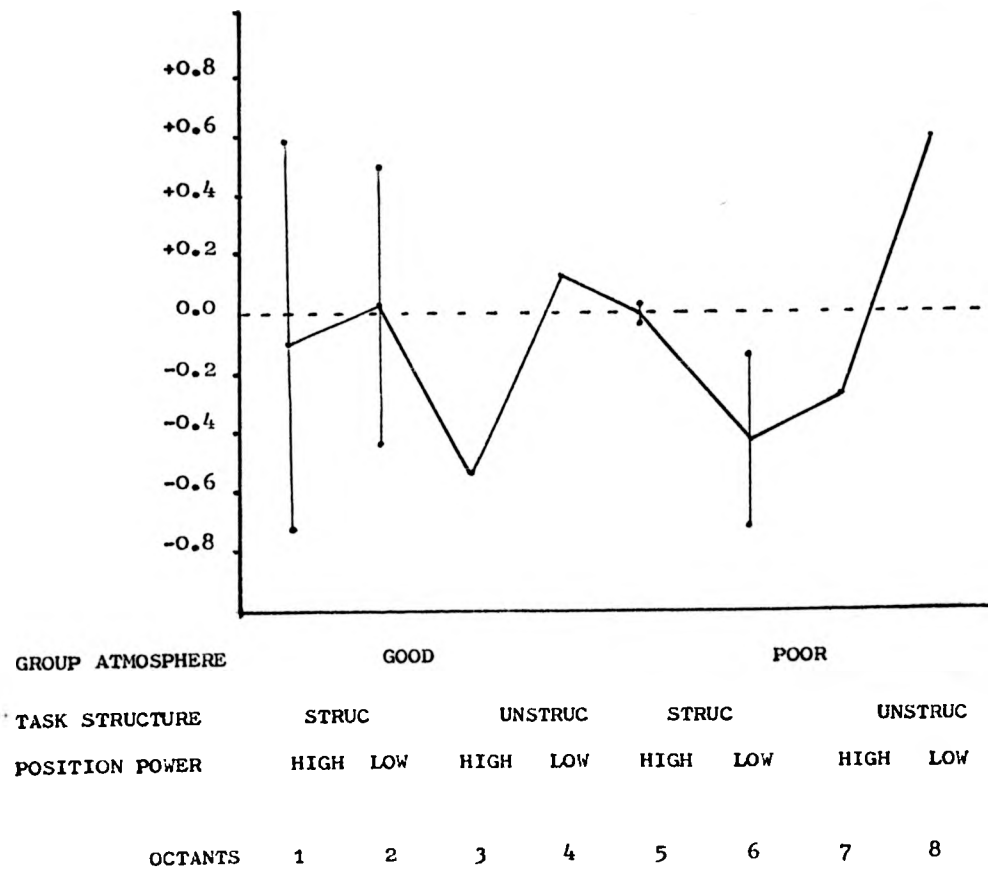
GROUP ATMOSPHERE	GOOD				POOR			
TASK STRUCTURE	STRUC		UNSTRUC		STRUC		UNSTRUC	
POSITION POWER	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
OCTANTS	1	2	3	4	5	6	7	8

Source: Fiedler 1966, page 255, Table 6

FIGURE 5

FIEDLER 1966: LPC/PERFORMANCE CORRELATIONS ON TWO STRUCTURED AND ONE
UNSTRUCTURED TASK: SEQUENCE BEGINNING WITH THE STRUCTURED TASK

CORRELATIONS:
 LEADER LPC
 AND GROUP
 PERFORMANCE

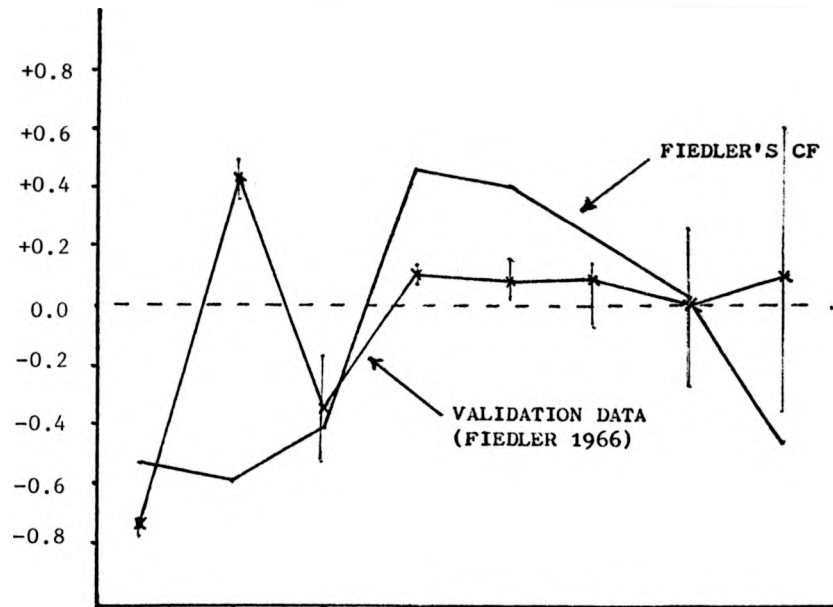


Source: Fiedler 1966, page 255, Table 6

FIGURE 6

FIEDLER 1966: FIEDLERS CLASSIFICATION OF THE DATA

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



GROUP ATMOSPHERE	GOOD				POOR			
TASK STRUCTURE	STRUC		UNSTRUC		STRUC		UNSTRUC	
POSITION POWER	HI	LOW	HI	LOW	HI	LOW	HI	LOW
OCTANT	1	2	3	4	5	6	7	8

SEE FIEDLER 1966: TABLE 6 AND FIGURE 5

a) Fiedler's (1966) 'Belgian Navy' Study: post-hoc Analyses

Fiedler continued to look for support for his contingency hypothesis by performing two post-hoc analyses of the LPC/performance relationship using two entirely new definitions of situational favourableness. In terms of the taxonomy earlier presented (page 24) these analyses would therefore come under the heading of 'Type 5' studies. However, for convenience, they will be presented here.

The first analysis involved a scaling of the group-task situation in which the homogeneity or heterogeneity of the groups was assumed to be the most important factor affecting degree of favourableness (see Fiedler, 1966: page 257). Next in importance was GA and then PP. Separate graphs were drawn for the structured and unstructured tasks (see Figure 7).

Fiedler concluded that these graphs 'clearly indicate(d) the curvilinearity of the relations'. (Fiedler, 1966: page 258)

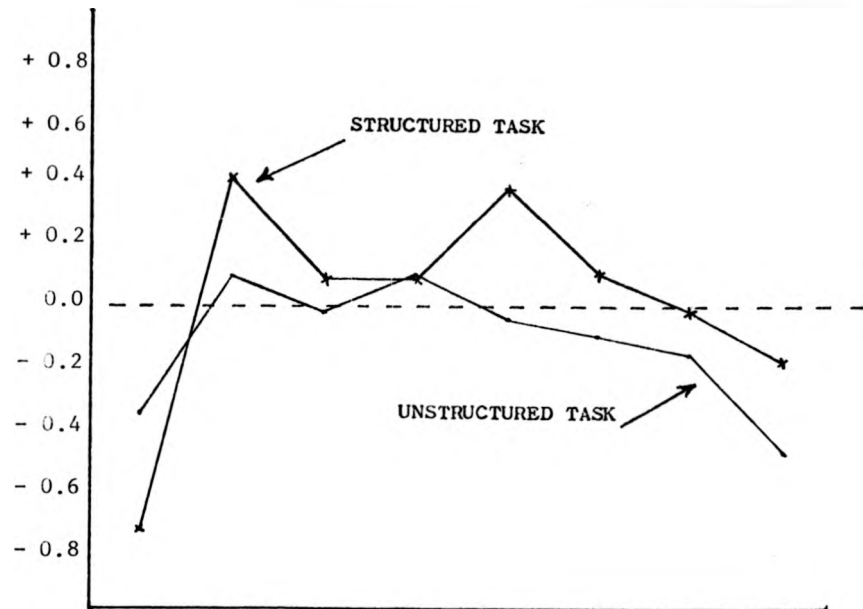
A second analysis also included the order of task presentation and 'learning effects' as 'situational' variables. Each of these variables was weighted according to its assumed importance in determining the favourableness of the situation for the leader (Fiedler, 1968: page 258). When describing the results of this analysis, Fiedler referred to a graph which was identical to the one he presented for the first post-hoc analysis (see Fiedler, 1966: figures 5 and 6). Despite this, Fiedler commented that the curve obtained in the second analysis 'clearly follows the prediction made by the contingency model'. (Fiedler, 1966: page 259)

It seems that Fiedler regarded these two post-hoc analyses as testing his contingency hypothesis. It also seems that he regarded the results of these analyses as supporting his hypothesis. However, the

FIGURE 7

FIEDLER 1966: POST-HOC CLASSIFICATION OF DATA FROM
HOMOGENEOUS AND HETEROGENEOUS GROUPS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



HOMOGENEITY	HOM				HET			
GROUP ATMOSPHERE	GOOD		POOR		GOOD		POOR	
POSITION POWER	HI	LO	HI	LO	HI	LO	HI	LO
OCTANT	1	2	3	4	5	6	7	8

SEE FIEDLER 1966: TABLE 6 AND FIGURE 5

specific contingency hypothesis cannot be claimed to have been tested since different definitions of situational favourableness were used (see page 16). In addition, whether or not 'the more general hypothesis' was tested cannot be assessed due to the many assumptions. Indeed, it has been concluded that in the absence of a general 'situational metric' the general hypothesis is untestable (see Chapter 1, page 17)

Only when SF is defined in terms of GA, TS, and PP, as in Figures 4 and 5 , can the specific hypothesis be claimed to have been tested. However, since the hypothesis makes no reference to task order effects, the data for the two task sequences should be combined.

It is difficult to decide what these results tell us about the validity of the contingency hypothesis. The measure of GA differed from that used previously and may be of acceptable validity. Furthermore, in the absence of any evidence to the contrary, there seems little reason to doubt the validity of the PP manipulation. However, the status of the TS manipulation seems more problematic, due to the absence of a significant correlation between group performance scores on the two structured tasks. As already noted, Fiedler decided to drop structured task I from the final analysis. In view of the fact that the groups failed to follow the instructions, this seems a valid rejection of the data.

It is therefore concluded that the performance data obtained on the two tasks, when ordered and classified in the manner described by Fiedler (1967), may be used to evaluate the validity of the CF. This is done in Figure 6 . These data fail to support Fiedler's contingency hypothesis. However, they do suggest that high and low LPC leaders differ in their effectiveness in octants 1, 2, and 3.

5.2 The Study by Chemers and Skryzpek (1972)

Chemers and Skryzpek (1972) conducted an experiment designed to replicate the full 8-cell design of the contingency model with manipulations and controls careful enough to provide an adequate test of the validity of the model. (Page 173)

The investigation involved four-man groups of American cadets attending a military academy.

LPC scores were obtained from the members of two companies, and the sample mean and standard deviation calculated. Those persons having an LPC score more than one standard-deviation above or below the group mean were selected to act as leaders. They were respectively defined as 'high' and 'low' LPC leaders. It is not possible to ascertain whether or not this definition of 'high' and 'low' LPC conformed with the definition given by Fiedler (1967) since the values of the mean and standard deviation were not quoted.

GA was manipulated by assigning persons to groups of sociometrically chosen or not-chosen others. This was judged to result in group situations of 'good' and 'poor' GA. Chemers and Skryzpek attempted to validate this manipulation by obtaining the leader's GA scores. The GA scores from the leaders assigned to the good and poor GA conditions were compared and found to be significantly different ($p < .01$), but the size of the difference cannot be determined from Chemers and Skryzpek's data. More importantly, the information which would indicate the region of GA scores in which the difference occurred was not provided.

PP was manipulated but not formally measured. The 'high' PP manipulation was attempted by informing half the groups that their performance would be evaluated by their group leader. In addition, they were informed that his evaluation would contribute to their final training grades. The

'low' PP groups were told that the experimenter would evaluate their leader's and their own performance. They were told that this assessment would not contribute to their training grades.

This manipulation may be of doubtful validity. Personal experience suggests that persons on training courses may find it very difficult to believe that their performance is not being evaluated for the purpose of determining their final grades. To the extent that this is the case, differences between the 'high' and 'low' PP groups would be lessened.

TS was manipulated by the use of two tasks, one being defined a priori as structured (drawing plans for a barracks) and the other as unstructured (discussion task). No formal measurements were taken.

Four groups led by high LPC leaders and four led by low LPC leaders were assigned to each condition. A repeated measures design was used whereby each group performed both the structured and unstructured tasks. There were thirty-two groups in all. Leader LPC scores and the performance data were correlated (see Figure 8). The relationship between these correlations and the median correlations cited by Fiedler (1967) was also calculated. A large, positive and statistically significant relationship was found ($\rho = .86$, $p < .05$; Pearsons $r = .89$, $p < .01$).

This method of evaluating the strength of support for Fiedler's hypothesis is subject to a number of powerful criticisms which suggest the method to be inappropriate and misleading (see Appendix B)

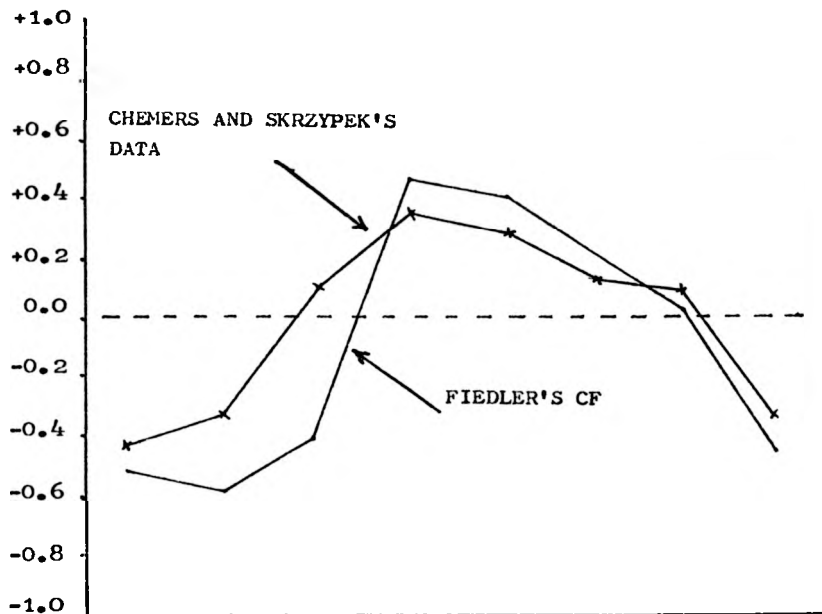
Fiedler (1973) stated that the Chemers and Skryzpek study represented 'the methodologically most adequate test of the entire model' (page 359). This seems to be the case. However, this serves to make it rather disturbing that no correlation between LPC and productivity was greater than .43 (three of the correlations were around .10). (A correlation

FIGURE 8

CHEMERS AND SKRZYPEK 1972: TEST OF FIEDLER'S

CONTINGENCY HYPOTHESIS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



GROUP ATMOSPHERE	GOOD				POOR			
TASK STRUCTURE	STRUC		UNSTRUC		STRUC		UNSTRUC	
POSITION POWER	HI	LOW	HI	LOW	HI	LOW	HI	LOW
OCTANT	1	2	3	4	5	6	7	8

coefficient of .43 means that the variation explained by the linear regression line is only 18.5 per cent of the total variance. A coefficient of .10 means that only .01 per cent of the total variation is explained.) Consequently the results of this study suggest that Fiedler's hypothesis has little predictive value.

5.3 The Study by Graen, Orris and Alvares (1971)

Graen et al. conducted two experiments, the second being a replication of the first except that different tasks were used. The experiments involved three-person groups of male American students who performed both the structured and unstructured tasks. For each task a different group member was designated as group leader by the experimenter. Their LPC scores were obtained and stratified into 'high' and 'low' (criterion levels not given).

GA scores were obtained by the use of a list of ten semantic differentials administered after task completion. The leaders' GA scores were dichotomized at the sample median (not given) into 'good' and 'poor' GA.

PP was assumed to have been manipulated by the use of Fiedler's (1963) checklist of position power. In the 'high' PP condition the leader was given 'Superior formal status relative to members, given special information about the task, and . . . decision-making authority and responsibility' (Graen et al., page 198). In the 'low' PP condition the leader was assigned the role of 'discussion leader without special information and with decision-making authority and responsibility close to that of the members' (ibid., page 198).

These manipulations appear to have involved a number of different kinds of power, for example, 'expert' power and 'legitimate' power (French

and Raven, 1959). This is also true of Fiedler's measure of PP. However, Fiedler's measure also includes some aspects of power not reflected in Graen *et al.*'s manipulation, e.g. the power to discipline and to hire and fire. Clearly these would be difficult to manipulate in a laboratory setting.

TS was manipulated by the use of four tasks (two structured and two unstructured) selected from the taxonomy of experimental tasks presented by Shaw (1962). The tasks were chosen because their mean ratings (derived from Shaw's judgmental data) were above or below Fiedler's criterion level of 5.0.

The performance measure was a 'standardized performance index' which combined information on the time taken and the quality of the solution. Exact details of the measure were not reported.

The correlations between leader LPC scores and the performance index are presented in Figure 9. None of the correlations were statistically significant. In experiment I, two of the seven correlations were in the direction opposite to that which was predicted (no prediction was made for octant 6). In experiment II, five of the seven correlations were in the contrary direction. An analysis of variance was conducted to determine if the factors specified by the contingency hypothesis had any effect on group performance. No main effects and no interactions were found.

These findings permit two alternative interpretations:

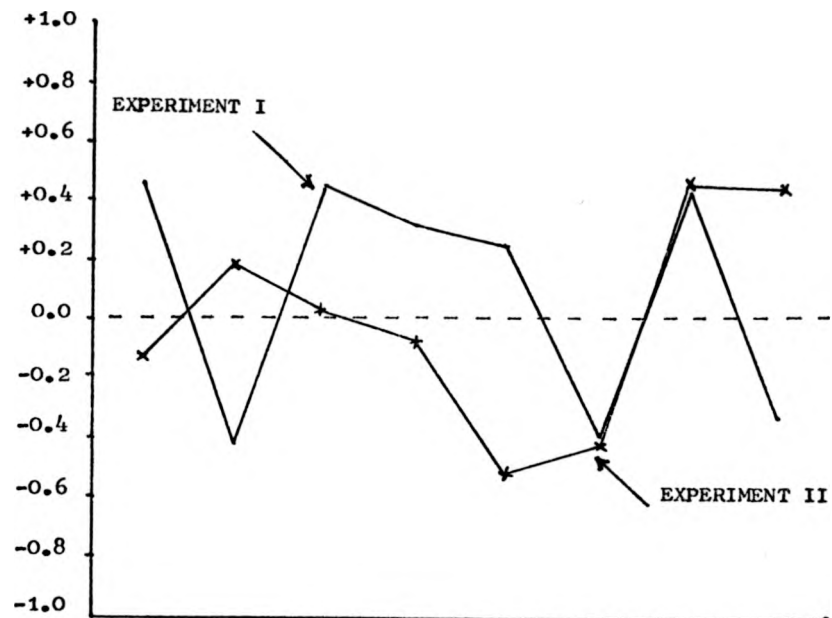
- (a) The experiments constitute adequate tests of the contingency hypothesis and the results suggest that it lacks validity.
- (b) The experiments were inadequate tests of the hypothesis and therefore the results have little bearing on its validity.

FIGURE 9

GRAEN et al 1971: TEST OF FIEDLER'S CONTINGENCY

HYPOTHESIS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



GROUP ATMOSPHERE	GOOD				POOR			
TASK STRUCTURE	STRUC		UNSTRUC		STRUC		UNSTRUC	
POSITION POWER	HI	LOW	HI	LOW	HI	LOW	HI	LOW
OCTANT	1	2	3	4	5	6	7	8

Graen et al. favoured the former interpretation whereas Fiedler (1971a) favoured the latter. Fiedler used three arguments to support his position.

(a) It is difficult to produce a high PP situation in a laboratory context.

Position power is conceptualized as providing the leader with some real power to give rewards and sanctions. In other words the leader must have some fate control over his members. (Fiedler, 1971a: page 203)

Fiedler argued that the contents and method of giving the experimental instructions were inadequate to achieve such fate control. Furthermore, he argued that Graen et al.'s practice of 'demoting' the leader to member status after the first group task session, and 'promoting' a member to leader status, was likely to 'dilute the formal leadership power' (Fiedler, 1971a: page 203). In other words, Fiedler claimed that no high position-power situation was tested.

In reply Graen et al. (1971a) claimed that the results of an 'indirect measure' of PP validated their manipulation. Their measure was of the degree of influence the leader felt himself to have had over his group's performance. This was obtained by the use of a scale ranging from 'no influence' (score 1) to 'the final word' (score 8). The results obtained are presented in Table 5.

Graen et al. (1971a) concluded that their results, 'though weak', were 'generally in the right direction' (page 207). This is true of the trends within each experiment. However, comparison of the means in the 'high' and 'low' PP conditions across experiments shows three of the means in the 'high' PP conditions (experiment I, octants 5 and 7; experiment II, octant 7) to have been lower than the means in the 'low' PP conditions (experiment II, octants 2 and 6; experiment I, octants 2, 4,

TABLE 5
CELL MEANS OF LEADER'S SCORES ON
PERCEIVED INFLUENCE

		Octants							
		1	2	3	4	5	6	7	8
EXP I									
Hi PP		5.8		6.2		5.1		5.1	
Lo PP			4.3		4.8		3.2		4.9
EXP II									
Hi PP		5.8		5.6		6.1		3.5	
Lo PP			5.4		5.0		5.4		4.8

and 8). It seems that Graen et al.'s conclusion cannot be accepted as valid, and that Fiedler's criticisms should be taken seriously.

(b) Fiedler's second criticism was that the 'structured' and 'unstructured' tasks selected by Graen et al. (see page 39) were not sufficiently different from each other to warrant the claim that the structure dimension had been manipulated.

Graen et al. replied that their tasks were above and below the criterion level of 5.0 specified by Fiedler (1967) and that the mean ratings of their tasks were representative of those employed in previous studies. Anticipating this argument, Fiedler (1971a) stated:

While it may be argued that the differences between structured and unstructured tasks in some of our studies were no larger, a study which seeks to disconfirm a theory should not rely on marginal experimental manipulations. (Page 203)

However, Fiedler's view seems inconsistent since studies on which the contingency hypothesis was based used similarly 'weak' manipulations (e.g. Godfrey et al., 1959; Hawkins, 1962; Meuse and Fiedler, 1964; Fiedler et al., 1967). In conclusion:

It does not seem reasonable to apply more 'stringent methodological requirements' to a study if its results are damaging to a model than if its results support that model. (Graen et al.: page 205)

(c) Fiedler's final criticism was that Graen et al.'s procedure of selecting and assigning leaders at random was likely to result in a biased distribution of LPC scores across the octants. In other words, some cells were likely to have a preponderance of high LPC scores, and some a preponderance of low LPC scores. Fiedler argued that this would not allow an adequate test of the model because 'the model assumes a roughly equal distribution of means and variances of LPC scores over the octants' (Fiedler, 1971a: page 204).

Graen et al. responded to this criticism by pointing out (quite correctly) that any differences in LPC scores which did occur between octants would be the result of random sampling variation, and not an inevitable consequence of using a random assignment procedure.

Fiedler sought empirical support for his criticism by performing a 1-way ANOVA on the LPC scores, with the octants as cells in the design. In the case of the data from experiment I he obtained a significant F ratio ($F=3.1$, $P<.01$), and interpreted this as showing 'that the means of leader scores differed markedly from octant to octant' (Fiedler, 1971a: page 204).

If this were the case, it would reduce the possibility of obtaining significant correlations between LPC scores and group performance. However, Fiedler's interpretation of the F ratio was incorrect. Whether or not

the means 'differed markedly' across octants could only be established by inspection of the data, not by the size of the F ratio. A more valid interpretation would conclude that a statistically reliable effect was observed when the eight cell means were compared. Graen et al. recognized that Fiedler had misinterpreted the F ratio and attempted to demonstrate this using Scheffé's procedure (Winer 1962) to test all pairwise differences between the octant means in experiment I. Using the .05 criterion level, they claimed to have found 'no significant comparisons' (Graen et al., 1971a: page 208). However, if the F ratio was significant at the .01 level, at least one comparison of the octant means should have produced a statistically reliable difference at the same level of significance (Keppel, 1973: page 89). It therefore seems that either a fault was made in the calculation of the F ratio, or in the Scheffé tests.

It seems that in experiment I, Graen et al.'s random assignment procedure may have produced a biased distribution of LPC scores across octants. However, the extent of the bias is not known.

It seems that only Fiedler's criticism of the position-power manipulation can be substantiated. Accordingly, the most valid representation of Graen et al.'s data seems to be as shown in Figure 10. These data fail to support Fiedler's contingency hypothesis. Furthermore, given the lack of statistical significance of the correlations, and the non-systematic nature of their distribution, they fail to support any hypothesized contingency between LPC, effectiveness, and situational favourableness.

5.4 The Study by Shima (1968)

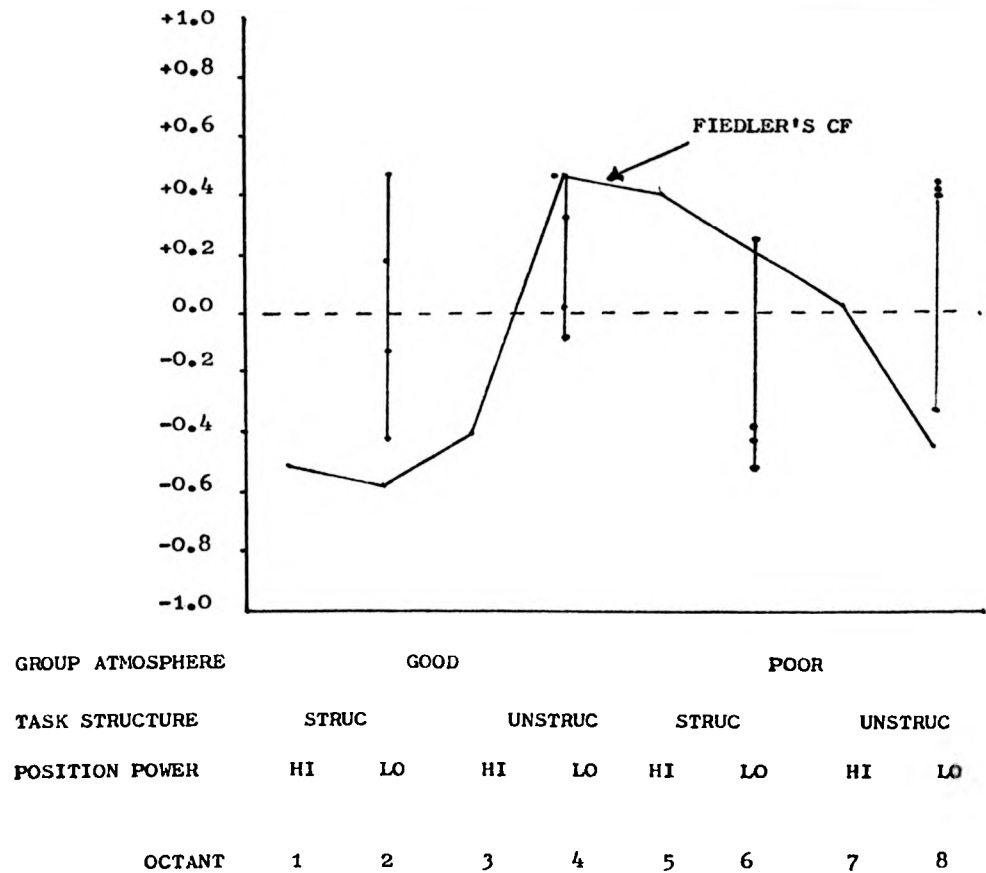
Shima (1968) tested Fiedler's contingency hypothesis using Japanese high-school students assembled into ad hoc, four-man groups.

FIGURE 10

GRAEN et al's DATA RECLASSIFIED INTO LOW POSITION

-POWER OCTANTS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



GA scores were obtained using a 10-item list of semantic differentials which were completed by the leader after task performance. Neither the raw scores nor the criterion levels for defining high and low GA were cited. However, Shima himself reported (page 16) that all the group situations were characterized by 'moderate' GA.

PP was not measured but assumed to be 'moderately strong' in each group situation since the leader was elected by the group members. Given the ad hoc nature of the groups this would seem to be an extremely dubious assumption.

TS was assumed to have been manipulated by the use of two 'idea' tasks (supposedly structured), and an 'integration' task (supposedly unstructured). The performance data on the two structured tasks was combined to give one performance score per group. One of the 'structured' tasks was the 'Unusual Uses Test' which Fiedler (1967: p. 128) suggested to require coaction rather than interaction (see page 6). If this were the case then only the data on the unstructured task could be used to test the contingency hypothesis. This is because Fiedler's hypothesis was restricted to interacting groups (Fiedler, 1967: p. 19). No formal measurements of task structure were made.

Whilst a total of thirty-two groups performed the experiment, sixteen did so under conditions designed to induce inter-group competition. For the purpose of testing Fiedler's hypothesis, these groups are ignored. This leaves sixteen groups, eight of whom performed the 'structured' tasks and eight of whom performed the 'unstructured' task.

Leader ASO scores were obtained and correlated with group performance data on the 'structured' and 'unstructured' tasks. Correlations of -26 and +71 were obtained. Whether or not these results support the CF depends upon the octants to which they should correctly be assigned.

Ignoring for the moment the dubious nature of one of the 'structured' tasks (see above), neither the manipulation of task structure or position-power were validated using formal assessment techniques. This makes it difficult to determine which group task situations were tested.

Shima claimed support for his manipulation of task structure by reference to the GA scores. He commented that these were higher in the (supposedly) structured situation than in the (supposedly) unstructured situation, and that this was in accordance with findings cited by Fiedler (1967; page reference not given).

Regardless of whether the difference was significant, Shima's argument is weak. Simply because GA scores are relatively high, it does not necessarily mean that TS scores are, too. If this were the case, the contingency model would involve quadrants not octants.

Even if it is assumed that Shima succeeded in manipulating task structure, considerable doubt remains regarding the octants which were tested. If, as Shima originally stated (page 16), GA was 'moderate' (i.e. not poor?), PP was 'moderately strong', and TS varied from structured to unstructured, then octants 1 and 3 were tested. If, as Shima later stated (page 20), GA was 'moderately good' in one task situation (deemed to be structured) and 'moderately bad' in the other task situation (regarded as unstructured), then octants 1 and 7 were tested. If, as Fiedler (1971a: page 136) suggested, PP was in fact low, then octants 2 and 4 or 2 and 8 were tested (depending on which statement of Shima's is accepted).

It is concluded that the results of this study are impossible to interpret.

5.5 The Study by Shaw and Blum (1966)

Fiedler (1971) defined this study as a test of the 'more general hypothesis' and concluded that the results 'conform(ed) to the general expectations of the model'. However, not one of the operational dimensions of Fiedler's model was measured, including LPC. Instead, Shaw and Blum assumed the status of the situational dimensions, and assumed that they had manipulated LPC scores by manipulating leader behaviour. Since differences in LPC scores do not reflect differences in leader behaviour (see Chapter 3), this study cannot be claimed as a test of either of Fiedler's hypotheses (see page 16)

5.6 Discussion of Type 3 Studies

The common feature of the studies in cell 3 was (by definition) the absence of formal measurement of the situational variables. Therefore the only way of assessing whether or not Fiedler's CF was tested was by face validity. This appeared to be higher in some studies (Fiedler, 1966; Chemers and Skryzpek, 1972; Graen et al., 1971) than in others (Shima, 1968).

In the studies by Fiedler, Chemers and Skryzpek, and Graen et al. the correlations were mostly small and individually non-significant (see Table 6). A few large correlations were obtained (e.g. 77, 72, 60), these usually occurring at the extremes of the SF 'dimension' (octants 1 and 8). The only octant in which the correlations were usually both large and in the predicted direction was octant 1.

It is concluded that whilst these studies constituted reasonably adequate tests of Fiedler's CF, the results provide it with little empirical support. However, as was the case in the study by Hunt (1967),

TABLE 6

SUMMARY OF THE RESULTS OF TYPE 3 VALIDATION STUDIES JUDGED TO
BE VALID TESTS OF FIEDLER'S CH

	Octants							
	1	2	3	4	5	6	7	8
Fiedler, 1966	-72	+50	-16	+13	+16	+14	+26	+6
	-77	+37	-54	+08	+03	+07	-27	-37
Chemers and Skryzpek, 1972	-43	-32	+10	+35	+28	+13	+08	-33
Graen <u>et al.</u> , 1971		+47		+46		+25		+45
		+18		+02		-39		+44
		-13		+33		-43		+43
		-41		-08		-52		-33

a contingency does appear to exist between LPC scores; GA, TS, PP, and leadership effectiveness, though not of the sort hypothesized by Fiedler (1967). The results of these 'type 3' studies suggest that the situational variables specified by Fiedler moderate the relationship between LPC scores and effectiveness, such that high and low LPC leaders differ in their effectiveness in octant 1, but not in the remaining seven octants.

6. DESCRIPTION AND ANALYSIS OF TYPE 4 STUDIES

Three of the studies described by Fiedler (1971) were of this type. They were by Fiedler, O'Brien and Ilgen (1969), O'Brien (1969), and Kretzschmar and Luecke (1969).

The first two studies involved ad hoc groups of male and female students (presumably lacking in leadership experience), whilst the study by Kretzschmar and Luecke concerned managers from four German companies. The studies differed considerably in their methodology. The investigations by Fiedler et al. and Kretzschmar and Luecke were field studies, whilst

O'Brien performed an experiment where each of the variables was manipulated and measured.

6.1 The Study by Fiedler, O'Brien and Ilgen (1969)

Fiedler et al. studied volunteer public health and community development teams working for a three-week period in Honduras. The teams were composed of from two to six members (average = three). The leaders were identified at the end of the project by asking the group members to state which of their team-mates they would prefer as leader in a similar situation.

The leader's GA scores were obtained using a list of ten semantic-differentials which were completed at the end of the project.

TS was not measured because of the widely varying tasks which the groups had to perform.

PP was not regarded as a relevant variable due to the fact that none of the leaders were formally appointed.

The SF 'dimension' was therefore measured by the use of GA scores and ratings of 'environmental stress' made by the project director.

Group effectiveness was evaluated by a variety of project personnel on six performance criteria.

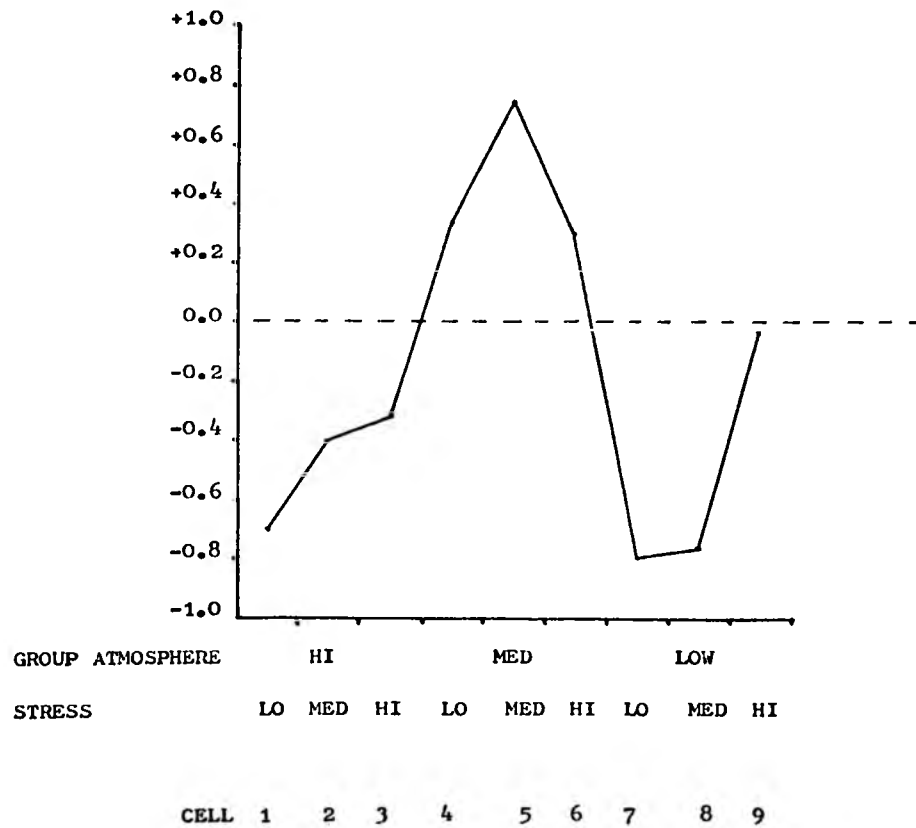
Fiedler et al. (1969) and Fiedler (1971) regarded this study as providing a valid test of the contingency hypothesis. Furthermore, they argued the results to be supportive of that hypothesis (see Figure 11). However, the claim that this study adequately tested Fiedler's CF rests on numerous assumptions of unknown validity (see page 24). It is concluded that in the absence of any reliable and valid information regarding the TS and PP variables, Fiedler's CF cannot be claimed to have been tested. The results of this study therefore have no bearing on

FIGURE 11

FIEDLER, O'BRIEN AND ILGEN, 1969: TEST OF FIEDLER'S

CONTINGENCY HYPOTHESIS

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



its validity.

Whilst these results are irrelevant to the assessment of the empirical validity of Fiedler's CF, they are not without significance. Inasmuch as sizeable correlations were obtained between LPC scores and group performance, the results suggest that LPC scores and leadership effectiveness are related.

6. The Study by O'Brien (1969)

The experiment by O'Brien (1969) was designed to test Fiedler's CF using the techniques of structural role theory. This allows one to describe the 'stimulus confronting a leader in a particular organization by defining the arrangement of persons, positions and tasks' (O'Brien: page 281).

Sixty-four groups of American psychology students were required to construct models of a given molecular structure. The task was to construct as many models as possible in forty minutes.

Situational favourableness (SF) was defined in terms of the leader's potential influence. This in turn was defined as 'the ratio between the number of paths connecting (the leader) to the task system and the total number of paths between persons and tasks' (O'Brien, 1969: page 282). It was assumed that the SF (leader's potential influence) would be 'greater as the amount of access he has to elements of the task system increases' (page 282).

The relationships between the three elements (persons, positions, and tasks) were respectively defined as 'interpersonal relations', 'legitimate power', and 'precedence relations between sub-tasks'. These relations were manipulated in order to achieve different levels of SF.

'Relationships between persons' were manipulated by constructing 'compatible' and 'incompatible' 'groups' according to individuals' scores on Schutz's FIRO-B scales (Schutz, 1958).

'Precedence relations between sub-tasks' were manipulated by the use of four different work allocations. The leader of each work-group instructed the group members on the work methods to be used.

'Legitimate power' was manipulated by: giving the appointed leader special knowledge of the work procedures, and having him use a 'directive' method for instructing his group; or by giving the entire group the information and having the leader use a participatory method. This manipulation would seem to be of 'expert power' (French and Raven, 1959) and leader behaviour rather than 'legitimate power'.

In two independent studies, O'Brien manipulated these variables to obtain three levels of SF: 'low', 'medium', and 'high'. O'Brien obtained a large and highly significant correlation between LPC and group effectiveness in the situation of 'medium favourableness' ($r=.77$, $p<.01$), but small and non-significant correlations when favourableness was 'high' ($r=-.08$) or 'low' ($r=-.13$). O'Brien argued that these data were 'consistent with predictions derived from the contingency model' (O'Brien: page 288).

There are at least two reasons why one might disagree with O'Brien's conclusion. First, the manipulation of potential influence also manipulated leader behaviour, thus confounding the individual-difference dimension with the situational metric. The LPC/performance correlations are therefore impossible to interpret. Second, it is not clear how O'Brien's definition of potential influence corresponds with Fiedler's definition of situational favourableness (see Chapter 1, page 12)

Given these considerations, O'Brien's study cannot be regarded as a valid test of the CF.

6.3 The Study by Kretzschmar and Luecke (1969)

Fiedler (1971) cited this study but judged it to be 'unclassifiable' and therefore ignored it when evaluating the empirical support for his CF. Fiedler gave two reasons for adopting this line:

- a) Information on the situational dimensions was obtained by getting the leaders to rate them.
- b) The leaders rated their own performance.

It seems reasonable to agree with Fiedler's conclusions regarding this study, mainly because Kretzschmar and Luecke's method of measuring the situational 'dimension' resulted in a definition of SF which was not independent of the leader.

6.4 Discussion of Type 4 Studies

The results obtained in these type 4 studies are regarded as irrelevant to the empirical assessment of Fiedler's contingency hypothesis. However, since some sizeable correlations were obtained between leader LPC scores and group performance, it seems that, given a valid situational metric, LPC may be a useful predictor of leadership effectiveness.

7. DESCRIPTION AND ANALYSIS OF TYPE 5 STUDIES

Studies of this type are characterized by the general absence of situational measures, and by a conceptualization of the situations in terms other than GA, TS, and PP. Of the validation studies described by Fiedler (1971a), only one study fits this category.

7.1 The Study by Nealey and Blood (1968)

Nealey and Blood designed a field study to investigate the variation in leadership demands from one organizational level to another.

LPC scores were obtained from first- and second-level hospital supervisors. In addition, their performance was rated by their immediate superiors. The resultant LPC/performance correlations were -22 (first-level supervisors, N=21) and +79 (second-level supervisors, $p < .01$, N=8).

Fiedler (1971) argued that the major difference between the two levels of supervision was in the extent to which their subordinates' tasks were structured. More specifically, he argued that the jobs performed by the subordinates of the second-level supervisors were relatively unstructured by comparison with the jobs performed by the subordinates of the first-level supervisors (Fiedler, 1971a: page 142). Given these arguments, Fiedler interpreted Nealey and Blood's results as showing that 'the structure of the supervisory task strongly moderates the direction of the relationship between LPC and organizational performance' (Fiedler, 1971 : page 143). This was taken as indicative of support for the CF.

Fiedler's post hoc interpretation of Nealey and Blood's results should be treated with considerable caution. First, he assumed that the difference between the LPC/performance correlations was explicable in terms of variations in the structure of the subordinates' task. Furthermore, in order to apply the above 'argument' Fiedler made a novel distinction between the structure of the task performed by the leader and the structure of the task performed by the group (see Figure 12).

FIGURE 12
INTERPRETATION OF NEALEY AND BLOOD'S STUDY
BY FIEDLER (1971a)

Task Structure?	2nd-Level Supervisors	(Unit Supervisors) $r=+79$
Unstructured	1st-Level Supervisors	(Subordinates of Unit Supervisors) $r=-22$
Relatively Structured	Subordinates	

It is concluded that the study by Nealey and Blood bears no relevance to Fiedler's contingency hypothesis and that for reasons already stated 'Type 5' studies can only provide data in support of the notion of a contingent relationship between LPC and situational variables.

8. CONCLUSIONS: EMPIRICAL SUPPORT FOR FIEDLER'S CONTINGENCY HYPOTHESIS

In recent years five major critiques of Fiedler's CF have appeared. These were by Fiedler (1971), Graen et al. (1971), Mitchell et al. (1970), McMahon (1972), and Ashour (1973). The five authors reached very different conclusions regarding the degree of evidential support for the CF.

In part the different conclusions were reached due to the use of different categories for organizing the data (e.g. laboratory v. field; Fiedler's methodology v. other), in part they rested on the application of

different statistical techniques (see Appendix B)

Fiedler (1971) concluded the available evidence showed his model to be 'valid for the prediction of leadership performance under field conditions' (page 141).

In contrast, Graen et al. (1971) concluded that 'the evidential probability for this model approaches zero' (page 295).

Ashour (1973) examined those studies which Fiedler (1971) regarded as valid tests of his CF. Ashour's conclusion was that 'the empirical evidence bearing on the model is inconclusive. Contradictory results are obtained from studies testing the model, most of which lack significance' (page 352).

However, some of the studies cited by Fiedler (1971) are difficult to interpret and others do not test Fiedler's CF at all. The conclusions reached in this chapter regarding the adequacy of studies claimed as tests of Fiedler's CF are summarised in Table 7.

TABLE 7

CLASSIFICATION OF STUDIES ACCORDING TO THEIR JUDGED ADEQUACY AS TESTS OF THE CONTINGENCY HYPOTHESIS

Adequate		Uninterpretable		Tests of Other Contingencies	
Study	Type	Study	Type	Study	Type
Fiedler, 1966	3	Shima, 1968	3	Fiedler, O'Brien and Ilgen, 1969	4
Hunt, 1967	2	Nealey and Blood, 1968	5	O'Brien, 1969	4
Hill, 1969	2			Shaw and Blum, 1966	3
Graen <u>et al.</u> , 1971	3			Kretzschmar and Luecke, 1969	4
Chemers and Skryzpek, 1972	3				

8.1 Comparison of Fiedler's CF with the Validation Data

The LPC/performance correlations obtained in the 'adequate' studies are portrayed in Figure 13. Having judged these studies to constitute tests of the CF, it becomes possible to assess the extent to which they provide it with empirical support. This may be achieved by comparing the size, sign and range of the correlations with those obtained in the studies on which the model was based.

a) Size of correlations

The size of the LPC/performance correlations is of significance inasmuch as sizeable r 's are a minimum requirement for LPC scores to have any predictive utility. Of the 56 correlations on which the CF was based, 53 per cent were larger than 0.4. Fewer sizeable correlations were obtained in the 'adequate' validation studies: 19/51 were larger than 0.4 (i.e. approximately 37 per cent). In addition, the number of correlations larger than 0.4 varied considerably between octants. For example, in octant 1, all five correlations were larger than 0.4; however, in octant 5, none of them were (see Table 8). Furthermore, a median correlation larger than 0.4 was obtained in only two octants (1 and 8), only one of these being in the predicted direction (octant 1).

TABLE 8

NUMBER OF SIZEABLE CORRELATIONS OBTAINED FROM 'ADEQUATE' TESTS OF FIEDLER'S CF

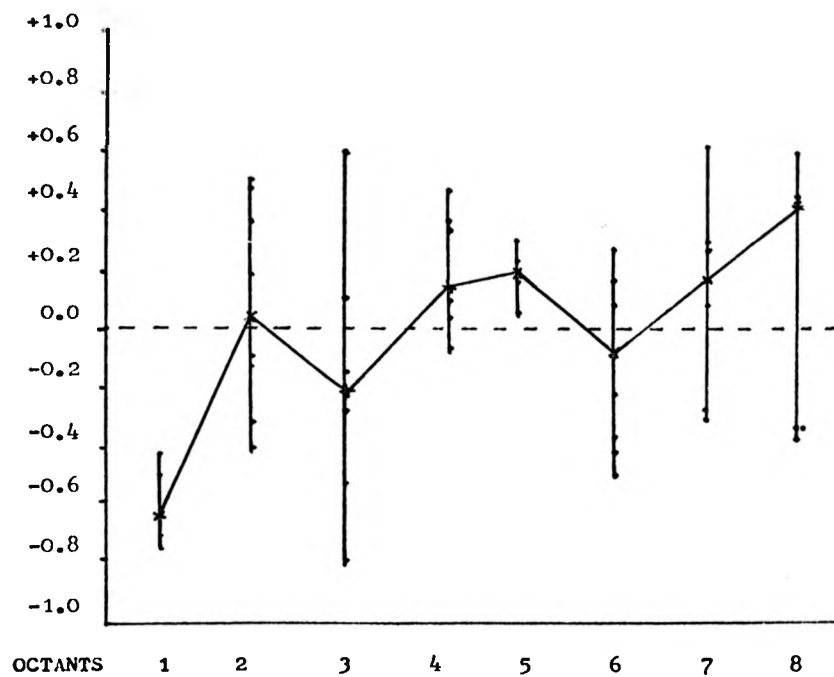
	Octants							
	1	2	3	4	5	6	7	8
Number of r 's over 0.4	5	3	3	1	0	2	1	4
Total number of r 's	5	8	6	7	4	8	6	7

FIGURE 13

MEDIAN CORRELATIONS OBTAINED FROM ADEQUATE

VALIDATION STUDIES

CORRELATIONS:
LEADER LPC
AND GROUP
PERFORMANCE



MEDIAN r:
FIEDLER 1967

-52 -58 -41 +47 +42 - +05 -43

MEDIAN r:
VALIDATION

-64 +04 -22 +13 +18 -09 +17 +42

b) Sign of correlations

One of the criteria used by Fiedler to evaluate the support for his CF is the number of correlations in the predicted direction. His prediction for each octant is indicated by the sign (+ or -) of the median r 's which define the CF. Taking this as the criterion, ~~72%~~ were in the predicted direction (31/43; no prediction for octant 6). Again, there were considerable differences between octants: four of the seven correlations in octant 8 were in the direction opposite to that predicted, whilst in octant 1 none of them were (see Figure 13).

c) Range of correlations

The variation about the medians is of crucial importance in determining the validity of the CF. For example, if all the median r 's obtained in the validation studies were in the predicted direction, but the correlations within each octant varied from positive to negative, this would indicate little support.

The data shown in Figure 13 show substantial variation about the medians, particularly in octants 2, 3, 6, 7, and 8. Of even greater concern is the fact that the variation extends from positive to negative in all but two of the octants. When compared with the correlations on which the CF was based, the validation data show more variation in octants 2, 7 and 8.

8.2 Implications of the Validation Data

These data have two major implications which can now be stated very briefly.

(a) The first is that Fiedler's CF has little empirical support.

This is shown by the fact that the median 'curve' differs considerably from the shape of the graph described by Fiedler, and by the substantial variation of correlations within each octant. Only in octant 1 is there a large median comparable to Fiedler's, and every individual correlation in the direction predicted by the CF. If one accepts Fiedler's situational metric, these results suggest that high and low LPC leaders differ in their effectiveness in octant 1 situations but not in any other. It may be that this is the contingency which requires explanation, not the contingency hypothesized by Fiedler (1967).

(b) The second conclusion concerns the utility of LPC scores as correlates of leadership effectiveness. The fact that sizeable correlations have been obtained between leader LPC scores and group performance (see page 55) suggests that LPC may be a useful measure in this context. This is because it is very unusual to obtain large correlations between individual difference measures and group performance (Morley and Stephenson, 1977). A similar conclusion was reached by Stogdill (1973) when he noted that LPC seems to be the only 'leadership variable' which is consistently related to group performance.

However, in the absence of any systematic relationship between LPC/performance correlations and the situational 'dimension', it seems that Fiedler's situational metric lacks sufficient validity. This may be because the situational measures are inadequate, or because the levels at which the variables are stratified are critical. In view of the powerful criticisms which have been made of Fiedler's situational measures (see, e.g., McMahon, 1972), the former inference seems the more valid. The now widespread acceptance of a contingency approach (Hill, 1973)

suggests that some means of measuring the leadership situation must be found. Once this is done, LPC scores may serve as useful predictors of leadership effectiveness.

PART II

WHY DO LPC SCORES CORRELATE WITH LEADERSHIP EFFECTIVENESS?

INTRODUCTION

ASO and LPC scores have been the subject of intensive research since 1950. However, these scores have been extremely resistant to meaningful interpretations which relate them to personality traits and to consistent behaviour patterns. (Fiedler, 1967: page 146)

Two of the major conclusions reached in the previous chapter were that:

- a) sizeable correlations have been obtained between LPC scores and 'leadership effectiveness' data;
- b) the size and direction of the relationship varies according to the situation in which the leader is operating.

The question obviously arises as to why this is the case. Attempts to answer this have focussed on two sorts of variables: leader behaviour dimensions, or underlying constructs such as personality, motivation, and cognitive complexity.

One of the earliest explanations of the meaning of LPC scores was that high and low LPC leaders differ in the ways in which they behave towards their subordinates. More specifically, low LPC leaders were said to behave in a 'controlling', 'directive', and 'task-oriented' manner, and high LPC leaders in a 'persuasive', 'considerate', and 'inter-personally-oriented' manner (Fiedler, 1958). This was assumed to be the case whatever the situation in which the leader was operating. However, empirical research failed to demonstrate consistent differences between high and low LPC leaders in the frequency with which they perform defined behaviours in 'all' situations. (See Chapter 3).

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Given that this was the case, Fiedler proposed alternative interpretations of the meaning of LPC scores which involved differences between high and low LPC leaders in their underlying motives for interpersonal interaction (Fiedler, 1972), and in their 'cognitive complexity' (Foa, Mitchell and Fiedler, 1971).

It is important to appreciate that these interpretations in terms of leader behaviour and underlying constructs are not necessarily alternatives. It may be that high and low LPC leaders do behave differently from each other, but the nature of the differences depends on the situation in which they were operating. If this were found to be the case, then the reasons why they so differed might be found in their scores on underlying constructs such as motivation.

Part II of this thesis reviews investigations into the relationship between leader LPC scores and constructs such as motivation and cognitive complexity (Chapters 4 and 5). This is done as an attempt to establish reasons why LPC scores correlate with leadership effectiveness since:

. . . if contingency models are to fulfil their promise theoretically and if they are to provide a guide for practice . . . the measurements must have construct validity. (Korman, 1966: page 386)

CHAPTER 3

RELATIONSHIPS BETWEEN LPC SCORES AND LEADER BEHAVIOUR

1. TECHNIQUES USED IN MEASURING LEADER BEHAVIOUR

Researchers have used a variety of techniques and obtained data from different sources in their attempts to describe and measure leader behaviour.

Bales and his colleagues at Harvard observed ad hoc groups performing laboratory tasks and analyzed their behaviour using a system called 'Interaction Process Analysis' (Bales, 1950). They observed two major dimensions of leader behaviour, which they labelled 'task' and 'socio-emotional'. Other researchers have also studied leader behaviour using techniques of process analysis though not necessarily the Bales system (e.g. Meuwese and Fiedler, unpubl.)

Paper and pencil techniques have also been used, sometimes by obtaining leader behaviour descriptions from group members and sometimes from the leader himself. Researchers at Ohio university developed the Leader Behaviour Description Questionnaire (LBDQ) which is used to obtain leader behaviour descriptions from group members. Factor analysis of their responses led to the identification of two major dimensions of leadership behaviour which were termed 'Consideration' and 'Initiating Structure' (Stogdill and Coons, 1957).

Likert (1961) and Kahn and Katz (1960) obtained their data on leadership practices from the leader himself. They also identified two 'dimensions' of leadership behaviour which they described as 'job-centered' and 'employee-centered'.

A number of points need to be made about these measures and the results obtained with them:

- a) In each case, two dimensions of leadership behaviour have been identified which are conceptually similar, but which differ in the precise details of the behaviours associated with each dimension.
- b) The profusion of measurement techniques and conceptual 'definitions' of different types of leadership behaviour has led to considerable semantic confusion: different authors have used the same terms to mean different things; and other authors have assumed different terms to mean the same.
- c) The use of different techniques of data collection usually produces conflicting results, for example subordinates' descriptions of their leader's behaviour bear little resemblance to their leader's self-description or to descriptions provided by observers (T. Mitchell, 1970).
- d) It is not clear which is the best predictor of leadership effectiveness: the leader's own descriptions of his behaviour, his subordinates' descriptions, or the descriptions of a non-participating observer.

2. RESEARCH ISSUES

Investigations into the relationship between LPC scores and leader behaviour have usually used either subordinates' descriptions or content analyses of leader behaviour observations. Table 9 presents studies categorized according to the method used to measure leader behaviour. The contents of each of these categories will now be described in some detail. However, before doing so it seems worthwhile to describe some of the issues which the results of these studies should help to resolve.

TABLE 9

TECHNIQUES FOR MEASURING LEADERSHIP BEHAVIOUR

MEASURE	SELF DESCRIPTION	SOURCE OF DATA	
		SUBORDINATES DESCRIPTIONS	CONTENT ANALYSIS
LOQ	Anderson, 1964 Weissenburg and Gruenfeld, 1966	NR	NR
LBDQ	NR*	Fiedler, 1966 Graham, 1968; 1973 Fiedler, O'Brien and Ilgen, 1969	NR
BDQ	NR	NR	NR
BALES IPA	NR	NR	Fiedler, London and Nemo, 1961 Sample and Wilson 1965 Gruenfeld, Rance Weissenburg, 1969
OTHER PROCESS ANALYSIS	NR	NR	Meuwese and Fiedler (unpubl.) Fiedler, Meuwese and Oonk (1961) Meuwese and Oonk

* NR = Not Relevant

a) Do high and low LPC leaders differ from each other in the frequency with which they perform certain behaviours in a given situation? If so, is this the case in all situations?

b) Do high and low LPC leaders differ from each other in the temporal patterning of their behaviours in a given situation? If so, is this the case in all situations?

c) Given a number of different, defined situations, do high LPC leaders exhibit the same behaviours as frequently in each? If so, is this also the case with low LPC leaders?

d) Given a number of different, defined situations, do high LPC leaders exhibit the same temporal patterning of behaviours in each situation? If so, is this also the case with low LPC leaders?

3. INVESTIGATIONS INTO THE RELATIONSHIP BETWEEN LEADER LPC SCORES AND LEADERS' DESCRIPTIONS OF THEIR OWN BEHAVIOUR

A study of this type was conducted by Weissenburg and Gruenfeld (1966). The subjects were thirteen male civil service supervisors who worked in an American state department of 'taxation and finance'. Weissenburg and Gruenfeld did not provide a description of the tasks these supervisors performed. The supervisors' LPC scores were correlated with their scores on the 'Leadership Opinion Questionnaire' (Fleishman, 1957). The LOQ is related to the LBDQ described earlier, but designed specifically for the leader to describe his own behaviour. It provides scores on the dimensions of 'consideration' and 'initiating structure' which have been defined as follows.

Consideration includes behaviour indicating mutual trust, respect, and a certain warmth and rapport between the supervisor and his group. . . . This dimension . . . includes such behaviour as allowing subordinates more participation in decision-

making and encouraging more two-way communication.

Structure includes behaviour in which the supervisor organizes and defines group activities and his relation to the group. Thus, he defines the role he expects each member to assume, assigns tasks, plans ahead, establishes ways of getting things done, and pushes for production. This dimension seems to emphasise overt attempts to achieve organization goals. (Fleishman and Harris, 1962: pages 43-44)

Weissenburg and Gruenfeld designed their experiment to test a number of hypotheses regarding the relationships between field-dependence (Witkin et al., 1962), LPC scores, and scores on the consideration and structure dimensions of the LOQ. Since Fiedler (1964) suggested low LPC scorers to be 'task-oriented', and in turn suggested task-orientation to be conceptually similar to initiating-structure, there was reason to suppose that high LPC scorers might obtain high consideration scores (see page 65). For this reason, Weissenburg and Gruenfeld examined the relationship between LPC scores and scores on the LOQ.

The authors concluded that 'an empirical relationship between these two measures could not be substantiated' (page 395). Unfortunately it is not at all clear what tests they performed on the data or what the actual results were.

In interpreting the significance of these findings it is necessary to take into account Weissenburg and Gruenfeld's comments on the LOQ. They suggested that it was 'highly transparent', 'susceptible to faking', and that 'the content of the LOQ, and the comments and responses of individuals to it, do not generate much confidence in its validity' (page 395). Therefore the implicit suggestion of the authors seems to be that their investigation did not constitute a valid test of the behavioural significance of LPC scores.

4. LEADER LPC SCORES AND SUBORDINATES' DESCRIPTIONS OF THEIR LEADER'S BEHAVIOUR

Studies relevant to this category were performed by Fiedler, O'Brien and Ilgen (1969), Graham (1968, 1973) and Fiedler (1966).

4.1 Fiedler, O'Brien and Ilgen (1969)

This study has been described in some detail in Chapter 2 (pages 48 to 49). The subjects were male and female students from American high-schools working in small groups as medical advisers to villagers in Central America. The group 'leaders' were identified by the use of a sociometric preference questionnaire, administered at the end of the project (usually three weeks). This was done by asking group members to state which of their team members would they most prefer to have had as a leader in a similar situation. It is important to note that this method of identifying the 'leader' may or may not identify the person who actually 'directed and co-ordinated task-relevant group activities', i.e. the 'leader' as defined by Fiedler (1967).

In order to define the situation in which the leaders and their groups were operating, Fiedler et al. obtained ratings of 'village stress' from the Project Director. The Director was given three criteria which he used to rate each village on a 10-point scale from 'very easy' to 'very difficult'. The villages were then sorted into high, medium and low stress categories.

Data on the leader's initiation of structure and consideration were obtained, as were leader LPC scores.

As was the case in the study by Weissenburg and Gruenfeld, only a very brief description of some of the results was provided. Fiedler et al. reported that 43 per cent of high LPC leaders were rated as 'high' in

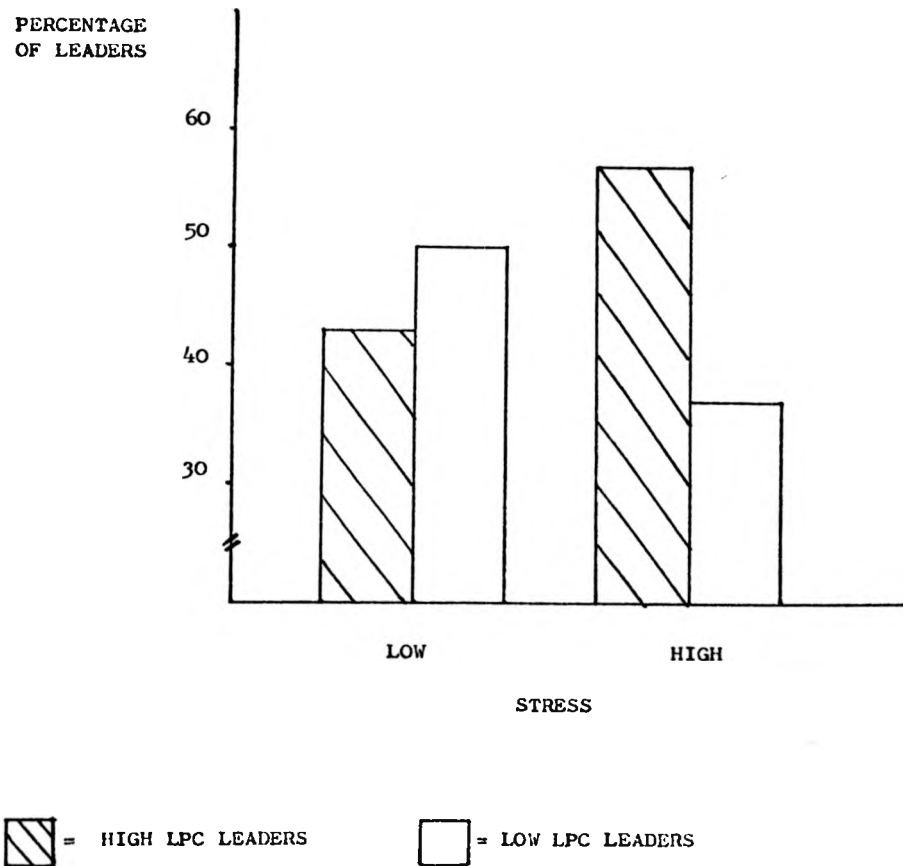
initiation of structure in the 'low stress' situation, whilst 57 per cent were rated as 'high' in initiating of structure in the 'high stress' situation. In the case of the low LPC leaders, 50 per cent were described as highly structuring in 'low stress' situations, whilst in 'high stress' situations only 37.5 per cent were so rated (see Figure 14). The only information provided on the consideration scores of the leaders was that 'high LPC leaders were rated as more considerate [than low LPC leaders?/] in the low as well as the high stress conditions' (page 513).

These data might be taken to suggest the following conclusions:

- a) High and low LPC leaders differ from each other in the frequency with which they perform structuring behaviours in a situation defined as 'high stress'. In such a situation high LPC leaders are more structuring than low LPC leaders.
- b) High LPC leaders use structuring behaviours more frequently in 'high stress' situations than in 'low stress' situations; low LPC leaders use structuring behaviours less frequently in 'high stress' situations than in 'low stress' situations.
- c) Assuming that 'consideration' means the same as 'interpersonally-oriented', and 'initiating structure' means the same as 'task-oriented', the interpretation of LPC scores whereby high LPC leaders are seen as 'considerate' and 'interpersonally-oriented' in contrast to low LPC leaders who are 'controlling', 'directive', and 'task-oriented' (see page 51), receives little support from these findings.

However, these conclusions should be treated with caution due to the absence of any information on the distribution of the LPC and LBDQ scores, and the operational definitions of 'high' and 'low' LPC and 'high' and 'low' structure.

FIGURE 14
PERCENTAGE OF HIGH AND LOW LPC LEADERS RATED
AS BEING HIGH IN INITIATION OF STRUCTURE



SOURCE: FIEDLER, O'BRIEN AND ILGEN, 1969

4.1 Graham (1968)

The subjects of this study were 116 life-assurance agents and their managers. The agents were described as being under high or low LPC leaders depending on whether their managers obtained an LPC score above or below the sample median (not given).

The agents described their manager's (leader's) behaviour using a 27 item version of the LBDQ.

The starting point of Graham's investigation was his recognition of the fact that the studies which failed to find relationships between LPC scores, consideration, and initiating structure had one thing in common. This was that they had investigated the relationship between LPC and descriptions of the frequency of consideration or structuring behaviours (e.g. Weissenburg and Gruenfeld, 1966; Meuwese and Fiedler, 1965).

It seemed to Graham that a more fruitful line of research was suggested by the findings of Sample and Wilson (1965). This was to examine the variability of subordinates' descriptions of their leader's behaviour. Graham's reasoning was as follows:

If the primary concern of the high LPC leader is the establishment of warm interpersonal relations, then descriptions of consideration behaviours made by individuals under this type of leader should evidence less variability than descriptions made by individuals under low LPC leaders. (Page 459)

Similarly, if the low LPC leaders' prime concern is with task achievement, then descriptions of their structuring behaviours should be less variable than the descriptions made by individuals under high LPC leaders.

The results are shown in Table 10.

TABLE 10

LBDQ RATINGS OF MANAGERS BY THEIR SUBORDINATES

Variables	Agents under High-LPC Managers		Agents under Low-LPC Managers	
	\bar{X}	σ^2	\bar{X}	σ^2
Consideration	60.7	86.4	61.9	266.3
I. Structure	49.9	49.4	50.5	42.5
	N=58		N=58	

Source: Graham (1968).

High and low LPC leaders did not differ significantly in the mean amount or frequency of their structuring and consideration behaviours. However, the descriptions of the consideration behaviours of low LPC leaders were significantly more variable than the descriptions obtained from the subordinates of high LPC leaders ($F=3.08$, $p<.01$). In the case of the structuring behaviours, the relative size of the two variances was in the predicted direction but was not significant.

With respect to consideration-type behaviours, Graham concluded:

Both types of leaders engage in this type of behaviour to a similar degree, but . . . low LPC leaders direct their behaviour toward certain group members while high LPC leaders are less selective. (Page 462)

Graham's data do not allow firm conclusions to be drawn with respect to the questions stated earlier in this chapter. This is mainly because of the way in which the leader behaviour descriptions were obtained. When members of work groups are given a questionnaire and requested to describe their leader's behaviour they are likely to provide a description which reflects their perception of that leader over a sub-

stantial period of time, and in a variety of 'situations'. Whilst Graham's data suggest that high and low LPC leaders do not differ from each other in the frequency with which they perform structuring and consideration-type behaviours, we do not know whether this is the case in 'all situations' or whether real differences between situations have been obscured by the data collection technique.

4.2 Graham (1973)

Graham designed this study as a follow-up to his previous investigation. Once again life-assurance agents and their managers (N=53) were the subjects. The manager's LPC scores were obtained and stratified into 'high', 'moderate', and 'low' (definitions of the levels not given). Descriptions of the manager's behaviour were obtained from the respective subordinates by the use of a 27-item version of the LBDQ.

The value of the sales made by each agent over a six-month period was obtained, and a 'median-dollar' production figure derived for each sales 'group'.

Graham claimed that the results of his earlier investigation (1968) suggested that LPC scores reflect differences between leaders in the way in which they react to things happening in their group. He therefore postulated that the variation in behaviour of low LPC leaders corresponds to variations within the group in the level of its task performance.

If such is the case, LPC might be described as a triggered behavioural disposition that determines sensitivity and responsiveness to specific kinds of feedback available from a group.

To test the validity of this postulate, Graham calculated a score

which indicated the relative amount of consideration and initiating structure behaviours exhibited by each manager. This he did by obtaining the LBDQ ratings from a manager's agents, and calculating a median score for each manager on both the structure and consideration dimensions. These scores were then converted to standard scores and a difference score calculated for each manager by subtracting his standardized structure score from his standardized consideration score. A relatively high positive score indicates that on average the manager was reported by his subordinates as engaging in consideration behaviours more frequently than in structuring behaviours.

The resultant leader-behaviour scores were stratified at the sample median to provide two levels. These data along with the leader's LPC scores (three levels) were treated as independent variables in a 2x3 ANOVA. 'Group performance' was treated as the dependent variable.

The results were as follows:

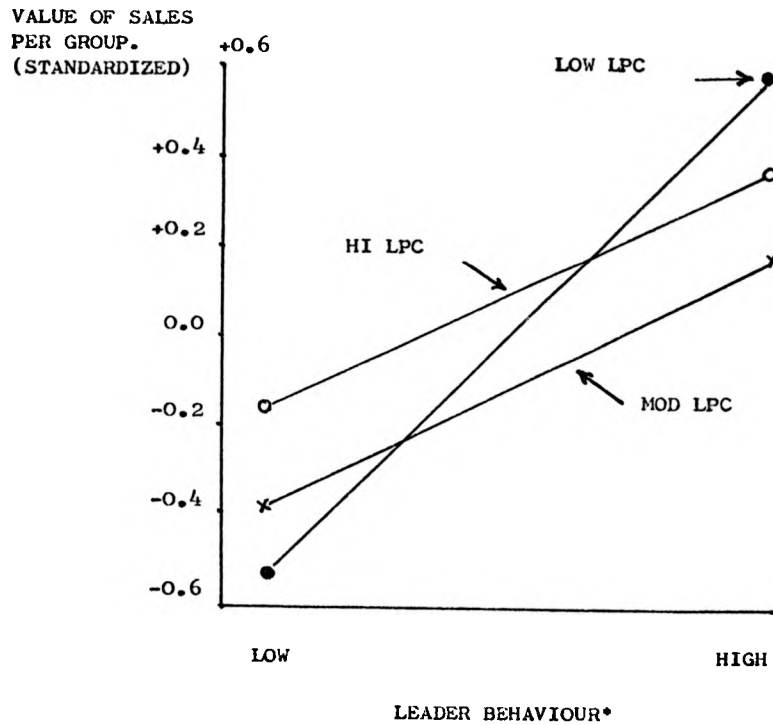
- a) A significant main effect was found involving leadership behaviour and performance: regardless of LPC scores, the highest sales figures were found to be associated with relatively high levels of consideration (as opposed to structuring) behaviours on the part of the manager ($F=6.6$, $p<.01$).
- b) A significant interaction was found between leader LPC and leader behaviour ($F=3.58$, $p<.05$).

These results are described more fully in Figure 15

Graham interpreted these results as showing that low LPC leaders were particularly sensitive (and accurate) in diagnosing how well their 'groups' were performing their task and that they varied their behaviour accordingly.

FIGURE 15

GRAHAM 1973: RELATIONS BETWEEN LEADER LPC, LEADER
BEHAVIOUR AND GROUP PERFORMANCE



* The higher the score, the more consideration-type behaviours (relative to structure) were seen to be employed by the leader.

It is important to appreciate that Graham's is only one of a number of possible interpretations of the data. Furthermore it is based on a high level of inference, and is deficient in at least one respect. Graham suggested that the results showed that low LPC leaders were "particularly sensitive" to the level at which their group was performing and that they varied their behaviour accordingly (page 65). This interpretation ignores the fact that the low LPC leaders were the least effective of the leaders rated low on the measure of leader behaviour (see Figure 15).

Instead, the results of Graham's ANOVA seem to suggest the following conclusions:-

- (a) No simple or direct relationship exists between LPC scores and ratings of consideration and initiating-structure. This may be because leaders vary their behaviour and/or because subordinates differ in the ways they perceive a given set of behaviours.
- (b) Of these who received high scores on the measure of leader behaviour, low LPC leaders were the most effective. Of those who received low scores on the behavioural index, low LPC leaders were the least effective. Unfortunately, Graham reported his findings in such a way as to make it impossible to deduce why this was the case.

4.3 Fiedler (1966)

This was one of the major validation studies of the contingency model. In addition, descriptions of the leaders' behaviour were obtained from their respective subordinates. These data, reported and discussed by Fiedler (1967), were obtained in order to throw light on the relationship between leader LPC scores and leader behaviour in different group-task situations.

The leader behaviour descriptions were obtained from group members after performance on both structured and unstructured tasks. The descriptions were obtained by the use of the Behaviour Description Questionnaire (BDQ) which consisted of 20 items 'identical or similar' to those employed in the LBDQ, plus other items felt likely to indicate important aspects of leader behaviour. The ratings of these items were factor analyzed, resulting in six clusters, one of which was significantly associated with leader LPC scores. A second-order factor analysis was then conducted and the six first-order factors were found to constitute one second-order factor.

Fiedler then correlated the leader's LPC scores with the scores he received from his subordinates on the items in the second-order factor. This was done twice: once on the data from the groups which were homogeneous in their language and culture, and once on the data from both the homogeneous and heterogeneous groups combined. The correlations were .62 ($p < .02$) for the homogeneous groups and .27 (ns) for the combined data.

Fiedler interpreted these correlations as showing that:

The low LPC leaders are relatively more directive, critical, considerate, motivating and structuring, and in the forefront of the group discussion when the situation is favourable for

the leader (i.e. homogeneous groups); the high LPC leaders are more directive, critical, considerate, etc., when the situation is increasingly more unfavourable for the leader (i.e. heterogeneous groups). (Fiedler, 1967: page 194)

An exhaustive critical appraisal of the validity of this interpretation is not possible without more information on the content of the questionnaire, the raw scores on the measures, and the full results of the factor analysis. However, it can and should be pointed out that the second part of Fiedler's interpretation would be more valid if it were changed to conclude that in the 'unfavourable' situation the relationship between leader LPC scores and the BDQ data was more variable, the source of the variation being unknown.

Without further information, the most it seems safe to conclude from these data is that high and low LPC leaders are differently perceived by their subordinates in a homogeneous group setting. It is concluded that these results are of little utility in evaluating the relationship between leader LPC scores and leader behaviour.

4.4 Conclusions

Three main conclusions are suggested by the results of these studies:

- (a) The subordinates of high and low LPC leaders differ in their perceptions of the ways in which their leaders behave in a given situation (Fiedler, O'Brien and Ilgen, 1969; Fiedler, 1966).
- (b) No direct relationship exists between LPC scores and leader behaviour: high and low LPC leaders do not consistently differ from each other in the frequency with which they employ consideration and initiating-structure behaviours (Graham, 1968; Graham; 1973).
- (c) High and low LPC leaders appear to vary their behaviour from one situation to another.

5. LEADER LPC SCORES AND NON-PARTICIPANT OBSERVER'S DESCRIPTIONS OF LEADERSHIP BEHAVIOUR, USING BALES'S IPA

Three studies occur within this category: Fiedler, London and Nemo (1961), Gruenfeld, Rance and Weissenburg (1969), and Sample and Wilson (1965). Their common feature is the use of Bales's system of Interaction Process Analysis (Bales, 1950) to describe and categorise leader behaviours.

Bales developed a set of twelve categories for classifying interactions (see Table 11) which were intended to be mutually exclusive and exhaustive. When the observers are trained by Bales in the use of his taxonomy, inter-rater reliabilities between .8 and .9 are usual (e.g. Gruenfeld et al., 1969: $r=.87$).

5.1 Fiedler, London and Nemo (1961)

This study involved groups of three women, two of whom were confederates of the experimenter. The one 'naive' subject was elected by the confederates to the position of 'leader'.

Each group was required to devise three stories about the contents of one TAT card, their objective being to be as 'creative' as possible. Their task sessions were tape-recorded and later content-analyzed.

The leader's group atmosphere scores were used to sort the group task situations into two categories: 'pleasant' and 'unpleasant'. Scores in the twelve leader-behaviour categories were derived by dividing the total number of 'acts' by the number of acts in a given category. This resulted in the raw score in each category being a reflection of the number of acts as a proportion of the total number of acts. These scores were then correlated with the LPC scores of the leaders (see Table 11).

TABLE 11

CORRELATIONS OF LEADER INTERACTIONS AND LPC SCORES

Category	'Pleasant' GA	'Unpleasant' GA
1. Shows solidarity, encourages, praises	.17	-31
2. Shows tension release, jokes, laughs	53	-05
3. Agrees, concurs, complies	14	33
4. Gives suggestion, direction	-45	-58
5. Gives opinion, evaluation	26	47
6. Gives orientation, information	-26	-14
7. Asks for orientation, information	64*	-24
8. Asks for opinion, evaluation	-28	04
9. Asks for suggestion, direction	-72*	-35
10. Disagrees, shows rejection	-50	61
11. Shows tension, withdraws	-64*	41
12. Shows antagonism, defends self	.00	43
Total interaction	02	-53

* $p < .10$

N=8

Source: Fiedler (1967), page 55.

The first point to note is that substantial correlations were obtained between LPC scores and leader behaviour but these were in the minority. Second, in some of the leader behaviour categories (e.g. 2, 7, 9, 10, 11) the size and direction of the correlation varied with a change in the group atmosphere. This may have been because the high and/or low LPC leaders varied their behaviour according to the way in which they perceived the group atmosphere, or simply random variation.

Fiedler (1967) felt justified in making considerably more of these findings. He not only deduced how high and low LPC leaders behave, but also why they behaved in those ways rather than in some other.

The high LPC leader generally behaves in a positive, relaxed, tension-relieving, and supportive manner in the pleasant group condition; the low LPC leader tends to behave in a more supportive, more active, and less rejecting, withdrawing, and antagonistic manner in the unpleasant situation. Thus the situation which is less personally satisfying causes the high LPC leader to interact on an emotional and personal level while the low LPC leader interacts in a more task-related manner . . . (Pages 54-55)

However, in view of the lack of statistical significance of most correlations, and the absence of any significance calculations between conditions, these conclusions seem unjustified. It is concluded that the major significance of these findings lies in their demonstration that LPC scores do correlate with behaviour and that the relationship appears to vary depending on the leader's perceptions of the situation.

5.2 Gruenfeld, Rance and Weissenburg (1969)

These authors set out to test the hypotheses that high LPC leaders would

behave in a less dominant, antagonistic and stress producing manner than low LPC subjects;

and that:

the differences in behaviour between high and low LPC subjects will increase as the favourability of leader-member relations decreases as a result of the gradual withdrawal of group support. (Page 101)

The experiment involved twenty-four groups, each of which was led by a male student selected on the basis of his LPC score (details of scores not given). Each group consisted of three confederates of the experimenter who behaved in ways designed to produce three levels of leader-member relations. The leader's task was to coordinate the group's efforts towards

achieving consensus on the content of three TAT pictures, and to record the ideas of the group.

A manipulation of the favourableness of the 'leader-member relations' was attempted by having the group members change in the way they behaved towards the 'leader' as the experiment proceeded. During the first phase of the experiment the group members asked for the leader's suggestions, agreed with them, and were generally supportive. This was the condition of 'Group Support'. During the second phase the members asked for fewer suggestions and did not always act in accordance with the leader's comments ('Group Medium Support' condition). In the final phase, described as 'Group Deprivation', two of the confederates turned to the third for advice and ignored the leader's suggestions. The unusual feature of these 'situational' manipulations was that they were conducted during one half-hour task session. This contrasts with the more usual method of manipulating the leader-member relations across different task sessions. Since stratifications of interactions during one task session are usually defined as phase effects, it seems more valid to treat the manipulations in this study as manipulations of phase rather than situation.

The leader's behaviour was observed and recorded, using Bales's categories from which were derived four dependent variables:

- a) 'Dominance', i.e. 'giving' minus 'asking' responses
- b) 'Acceptance', i.e. 'agree' minus 'disagree';
- c) 'Antagonism';
- d) 'Tension Release'.

Within each of these four categories, a score was derived by dividing the number of 'behavioural acts' within the category by the total number of acts performed by that person. The scores therefore indicate the relative frequencies of their various behaviours. The scores of the

high LPC leaders were then combined and the mean frequency of behaviours in each category calculated. This was also done for low LPC leaders. Furthermore, these analyses were performed separately on the data from each of the three conditions of leader-member relations (see Table 12).

a) The low LPC leaders were found to be significantly more dominant than the high LPC leaders. In addition, whilst they were more dominant in all three conditions, the differences between the high and the low LPC leaders were maximised in the 'medium support' condition. Significant variations occurred in the leaders' behaviour across conditions and these variations were particularly marked in the behaviour of the low LPC leaders.

b) The high and low LPC leaders also differed significantly in the level of their acceptance behaviours: the high LPC leaders were more accepting in all three conditions. Differences due to variations in the level of group support were also significant: both high and low LPC leaders reduced the proportion of their acceptance behaviours as the level of group support declined.

c) No significant difference was found between high and low LPC leaders in their level of antagonism. However, differences associated with variations in the level of group support were significant, as was the group support/LPC interaction. The interaction shows that high and low LPC leaders differed from each other in the patterning of their behaviours: whilst the low LPC leaders reduced the level of their antagonism with increased group support, the high LPC leaders displayed least antagonism in the 'group support' condition and most in the 'medium support' condition.

d) The high LPC leaders showed significantly more tension-release

TABLE 12

LEADER BEHAVIOUR IN THREE CONDITIONS OF GROUP SUPPORT

		LEVEL OF GROUP SUPPORT		
		GROUP SUPPORT	GROUP MEDIUM SUPPORT	GROUP DEPRIVATION
DOMINANCE	HI LPC	7.7	7.7	3.9
	LOW LPC	8.2	16.4	6.2
ACCEPTANCE	HI LPC	16.1	14.7	12.8
	LOW LPC	13.6	12.1	9.1
ANTAGONISM	HI LPC	0.0	1.1	0.5
	LOW LPC	0.1	0.7	2.1
TENSION	HI LPC	2.6	5.2	3.9
RELEASE	LOW LPC	1.5	2.9	1.6

SOURCE: Gruenfeld, Rance and Weissenburg, page 103

than the low LPC leaders. This was the case regardless of the level of group support. No significant differences were found in the levels of tension-release displayed in the different group task conditions.

These findings are of significance inasmuch as they show differences between high and low LPC leaders in the way in which they respond to the 'same' condition. They also cast considerable doubt on the assumption of behavioural consistency within situations (see page 63) inasmuch as they show that leaders behave differently depending on the phase they are in. However, when interpreting these findings it must be appreciated that the manipulation of group support was confounded with both time spent in interaction and progress on the task. Therefore the variations in behaviour found to be associated with differences in the level of group support may well be 'explicable' in terms of some other variable.

Even so, these results seem to be of particular value in establishing the behavioural significance of LPC scores.

5.3 Sample and Wilson (1965)

This study compared the behaviour of high and low LPC leaders of four-man groups performing laboratory tasks. The group members were students who were used to working together on such tasks. Therefore the groups were 'ongoing' rather than 'ad hoc' (see page 11)

The group leaders were appointed by the instructor, but only those who were subsequently 'endorsed' by their group members were included in the results. Each leader had been assigned specific tasks such as leading group discussion, and each had an LPC score at least one standard deviation from the mean (sample statistics not given).

The groups' task was an operant conditioning exercise. Whilst they had performed such a task on a number of previous occasions they had

previously had more time available, and the use of a laboratory manual. Leader behaviour was observed and categorised using the Bales system. In addition, the observers noted the nature of the group's activity: planning, running, or paper work.

Leader behaviour scores were obtained by dividing the number of acts in a given category by the total number of acts, and then multiplying by a hundred. This was done on the leader behaviour scores from both the high LPC groups and the low LPC groups and a 'mean percentage' of acts computed for each category (see Table 13).

TABLE 13
MEAN PERCENTAGE OF LEADERS' ACTS PER CATEGORY
DURING EACH PROBLEM PHASE

Behaviour Category	Problem Phase		
	Planning	Running	Paper Work
High LPC leaders			
Positive socioemotional	30	14	29
Attempted answers	48	62	50
Questions	15	11	13
Negative socioemotional	6	12	8
Low LPC leaders			
Positive socioemotional	11	31	19
Attempted answers	71	52	61
Questions	15	6	15
Negative socioemotional	3	10	5

Source: Sample and Wilson (1965), page 268.

Sample and Wilson reported that the high and low LPC leaders differed very little in the overall frequency with which they used certain behaviours. However, when the timing of the high and low LPC leaders' behaviours was

compared, they were found to differ from each other significantly.

a) During a particular problem phase (e.g. running) clear differences were found between the high and low LPC leaders in their use of 'positive socioemotional' behaviours, and 'attempted answers' ($p < .01$).

b) Both high and low LPC leaders varied the overall frequency with which they used certain behaviours across phases. For example, high LPC leaders increased the proportion of suggestions they made as the task progressed, whilst the low LPC leaders reduced the proportion of their suggestions.

c) The two types of leader differed from each other in the patterning of their behaviour in the following ways. The low LPC leader started the task by being extremely task-oriented (attempted answers and questions; see Bales, 1950), and once the task was under way, he increased the level of his positive socioemotional behaviours (see Figure 16). The high LPC leader behaved rather differently. He started off by devoting one-third of his interaction to positive socioemotional behaviours and increased his task-oriented activity during the second (running) stage of task performance.

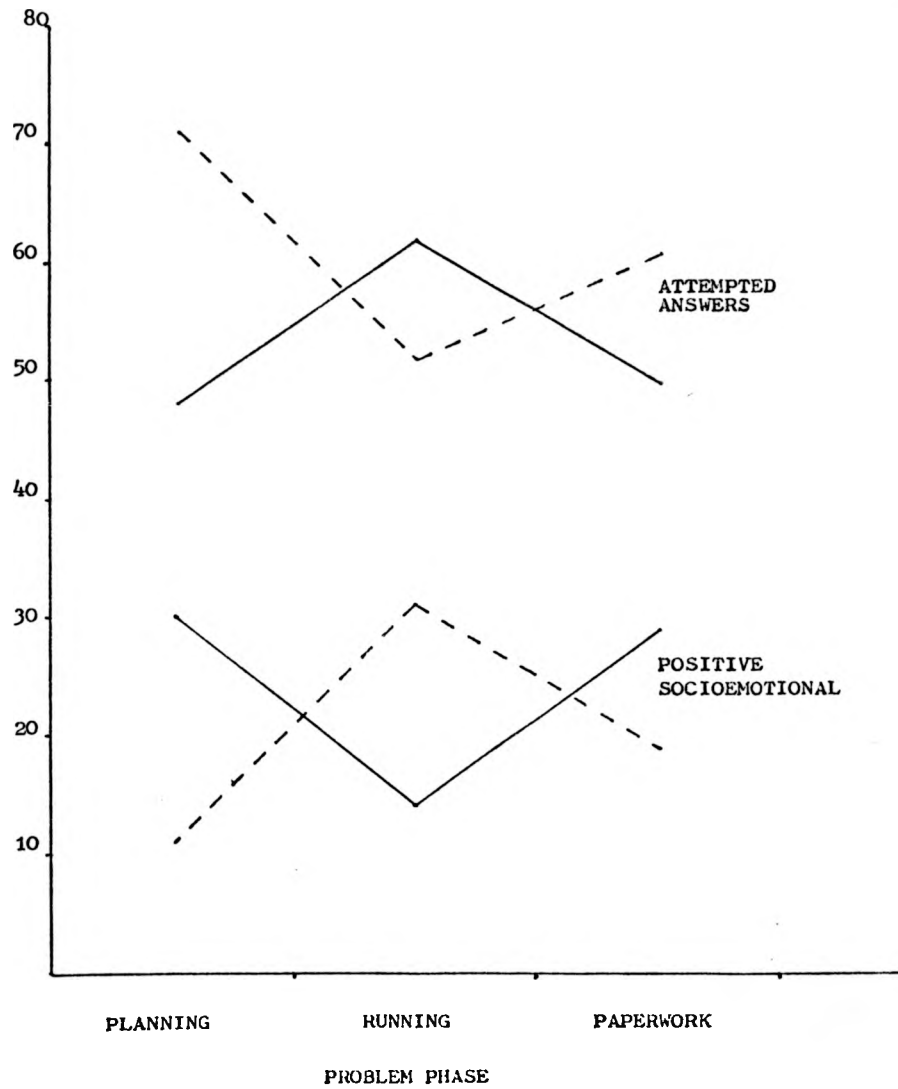
These results are of significance in two main ways. First, because they show why in the past consistent relationships have not been found between LPC scores and leader behaviour, i.e. because researchers failed to take into account phase variations in leader behaviour. Second, they provide an 'explanation' of the reasons why the relationship between LPC scores and effectiveness varies, i.e. because in some situations it is more 'effective' to get the task set up and then deal with the relationships and in other situations it is more 'effective' to do things the other way around.

FIGURE 16

SAMPLE AND WILSON 1965: RELATIONS BETWEEN LEADER

LPC SCORES AND LEADER BEHAVIOUR

MEAN %
OF ACTS



— = HIGH LPC

- - - = LOW LPC

5.4 Conclusions: LPC Scores and Observations of Leader Behaviour Using Bales's IPA

The results of these three studies suggest the following general conclusions.

- a) When leader-member interactions on a given task are divided into phases (according to some criterion), high and low LPC leaders are found to differ from each other in the proportion of their interactions which they devote to defined behaviours (Gruenfeld et al., 1969; Sample and Wilson, 1965).
- b) When leader-member interactions in differently perceived situations are compared, both high and low LPC leaders differ within themselves in the proportion of their interactions which they devote to defined behaviours (Fiedler, London and Nemo, 1961).
- c) When leader interaction data are combined across phases, within a particular task session, no significant differences are found between high and low LPC leaders in the proportion of their interactions which they devote to task or socioemotional behaviour categories (Sample and Wilson, 1965). However, where some specific behaviours are concerned, high and low LPC leaders do differ from each other inasmuch as they consistently employ these behaviours to a different degree whatever the phase (e.g. high LPC leaders consistently showed more 'tension-release': Gruenfeld et al., 1969).

In addition, a number of rather more general issues are raised by these studies. The first concerns the rather fine distinction between 'phases' and 'situations'. For example, Fiedler et al. (1961) had different groups perform the same task under two different conditions of 'group atmosphere'. This was seen as a manipulation of the group task situation. However, Gruenfeld et al. (1969) had a number of groups perform

the same task, whilst the group atmosphere (defined differently from above) was manipulated during the task session. This was seen as a manipulation of the phases within a group task situation. This point should be borne in mind when evaluating the literature on relations between LPC and leader behaviour.

The second point concerns the tendency of researchers to use sample-bound definitions of 'high' and 'low' LPC (without quoting details of the sample distribution) rather than the criterion levels suggested, but seldom used, by Fiedler (1967). When this is the case, the most that can be concluded from their data is that the persons who obtained the higher LPC scores did such and such, whilst the persons with the lower LPC scores etc. (see, for example, Fiedler et al., 1961).

The remaining point is also a methodological one. It concerns the use of correlation coefficients to index the relationship between LPC scores and leader behaviour. When, as in these three studies, leader behaviour is examined in a variety of situations or phases, the most useful form of analysis is the analysis of variance (see Gruenfeld et al., 1969), not correlations (as in Fiedler et al., 1961).

6. LEADER LPC SCORES AND NON-PARTICIPANT OBSERVER'S DESCRIPTIONS OF LEADERSHIP BEHAVIOUR, USING METHODS OTHER THAN THAT OF BALES (1950)

Studies of this type were performed by Fiedler, Meuwese and Oonk (1961) and Meuwese and Fiedler (unpub.).

6.1 Fiedler, Meuwese and Oonk (1961)

In this study, sixty-four Dutch students were assembled into sixteen four-man groups characterized by religious homogeneity, and then reassembled into sixteen groups heterogeneous in religious denomination.

In each condition, half the ad hoc groups had their leaders assigned by the experimenter whilst the remainder operated under conditions of emergent leadership. Their task was to devise three stories about one TAT card which were to be as original as possible.

The group discussions were tape-recorded and the leader's statements sorted into six categories:

- a) procedural remarks concerned with the way the group should go about its task;
- b) the introduction of new ideas which suggested problem solutions;
- c) the elaboration of new ideas - taking up others' suggestions and carrying them further;
- d) remarks criticizing ideas or behaviours of others;
- e) comments irrelevant to the task, i.e. comments concerned with group maintenance, jokes, or other tension-relieving remarks;
- f) total activity, i.e. the total number of comments in each of the sessions. (Fiedler, 1967: page 53)

Leader LPC scores were then correlated with their scores in the behavioural categories. Whether the scores in the behaviour categories were number of acts of that type or the number of acts as a proportion of the total, was not stated.

Fiedler et al. computed these LPC/behaviour correlations in what was assumed to be two different task situations: 'relaxed' and 'strained'. Whether a group was relaxed or strained was assessed in terms of the number of critical remarks (leader behaviour category), and by 'socio-metric ratings describing one or more of the members as destructively critical in behaviour and attitudes'. The ten most 'relaxed' groups and the ten most 'strained' groups were then selected for the purpose of examining the relationship between LPC scores and leader behaviour. The

In each condition, half the ad hoc groups had their leaders assigned by the experimenter whilst the remainder operated under conditions of emergent leadership. Their task was to devise three stories about one TAT card which were to be as original as possible.

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results shown in Table 14.

TABLE 14
CORRELATIONS BETWEEN LEADER LPC AND LEADER BEHAVIOUR
IN TWO GROUP SITUATIONS

Behaviour	Relaxed Groups	Strained Groups
1. New ideas	-11	-14
2. Elaboration	-28	-59*
3. Critical remarks	-15	08
4. Procedural remarks	.54	40
5. Irrelevant remarks	27	61*
6. Total Activity	05	-52

* $p < .10$

N=10

Fiedler (1967) interpreted these correlations as showing that:

In the socially strained situation, the low LPC leader manifested a higher rate of task-relevant behaviour while the high LPC leader manifested a higher rate of relationship-oriented and task-irrelevant comments. (Page 54)

A more precise description of the results would seem to be that no systematic relationship was found between LPC scores and the leader behaviour categories except in two instances: low LPC leaders tended to elaborate more than high LPC leaders in the 'strained' situation, and the high LPC leaders made more irrelevant remarks. That this was not the case in the 'relaxed' situation shows that either the high LPC or the low LPC leaders, or both, changed their behaviour (in these two categories) from one situation to the other.

Therefore the conclusions to be drawn from these results are that

high and low LPC leaders differ from each other in their 'irrelevant remarks' and 'elaboration' behaviours in 'strained' situations, and that they vary within themselves in the ways in which they behave in relaxed and strained situations. However, the validity of these conclusions rests on the validity and reliability of the system of content analysis which was used (about which we know nothing), and on the validity of the distinction between 'relaxed' and 'strained' situations.

One of the two ways in which the situation was assessed was in terms of the number of critical remarks. However, this is rather tautologous inasmuch as this means that the situation (which is supposed to be 'external' to the leader) was defined in terms of how the leader behaved. A rather different point concerning the adequacy of the 'situational' metric is the fact that in the same study Fiedler et al. correlated leader LPC scores with group performance data and used an entirely different situational metric. This was based on the assumption that homogeneous groups with appointed leaders would be more pleasant and relaxed and therefore less stressful for the leader. Heterogeneous groups with emergent leaders were assumed to be more stressful for the leader, partly because group members would compete for the leadership position (Fiedler, 1967: page 114). It therefore seems that Fiedler and his colleagues see no objection to categorising the same data in a different manner depending on the purpose of the analysis. This means that it is perfectly possible for a group to have been defined as 'strained' in one analysis and as 'relaxed' in the other. Taking these considerations into account, it seems that the results of this study should be treated with caution.

6.2 Meuwese and Oonk (unpub.)

These authors content analysed the statements of both leaders and group members in the Fiedler, Meuwese and Oonk study. The results of their analyses were described by Fiedler (1967: page 186).

Meuwese and Oonk analysed leader/member interactions using the same method of content analysis as was used by Fiedler, Meuwese and Oonk (1961). However, the scores in each category were expressed as a percentage of the total number of comments.

In order to classify the group task situations, Meuwese and Oonk used a method similar to that used by Fiedler et al. when they correlated LPC and group productivity. Meuwese and Oonk assumed that homogeneous groups with appointed leaders would represent the most 'favourable' situation for the leader, whilst heterogeneous groups with emergent leaders would provide the least favourable situation. The remaining two group situations were judged to be intermediate in favourableness. Thus Meuwese and Oonk assumed three levels of 'situational favourableness', whilst Fiedler et al., using a similar 'logic', assumed only two (see Fiedler, 1967: page 114).

Meuwese and Oonk assumed that 'elaboration' and 'critical remarks' were task behaviours, and 'procedural remarks' and 'irrelevant remarks' were indicative of attempts to control interpersonal relations (see Table 15).

TABLE 15

PROPORTION OF TASK AND INTERPERSONALLY-ORIENTED BEHAVIOURS
OF HIGH AND LOW LPC LEADERS AND THEIR GROUPS

	Situational Favourableness					
	High				Low	
	Homogeneous / Appointed		Homogeneous / Emergent, and Heterogeneous / Appointed		Heterogeneous / Emergent	
	Hi LPC	Lo LPC	Hi LPC	Lo LPC	Hi LPC	Lo LPC
Interpersonal behaviours	24.3	33.3	32.9	32.7	29.8	23.8
Task behaviours	75.3	65.9	67.2	67.1	61.5	76.0

Source: Fiedler 1967, page 187; Analysis by Meuwese and Oonk.

See Figures 17 and 18.

The results show that both high and low LPC leaders and their groups made considerably more task-oriented remarks than relationship-oriented in all three situations. The data also suggest an interaction between leader LPC, leader and group behaviour and the situation. It appears that high LPC leaders and their groups increase the level of their interpersonal behaviours and reduce the proportion of the task behaviours with reductions in the 'favourableness' of the situation. In contrast, low LPC leaders and their groups reduce the proportion of their interpersonal behaviours and increase their task behaviours with reductions in 'situational favourableness' (see Figures 17 and 18). In sum, these results show that high and low LPC leaders and their groups differ from each other in the ways in which they behave within a situation, and differ in themselves in the way they respond to changed situations.

However, as was the case with Fiedler, Meuwese and Oonk, the validity

FIGURE 17

PROPORTION OF INTERPERSONALLY-ORIENTED BEHAVIOURS OF HIGH
AND LOW LPC LEADERS AND THEIR GROUPS

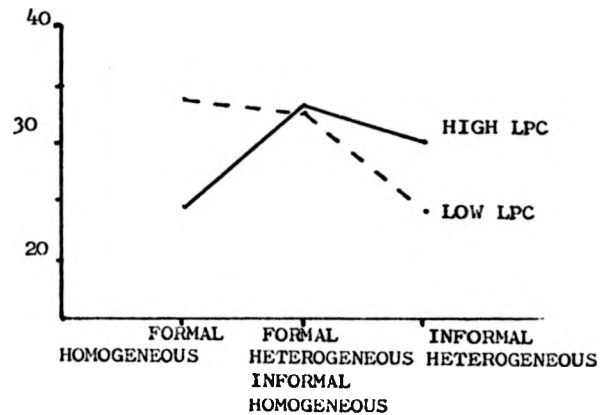
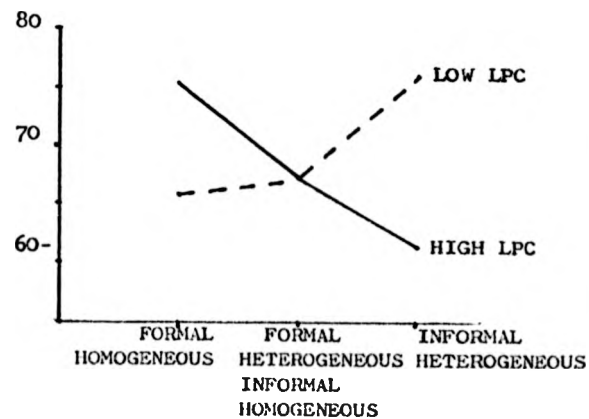


FIGURE 18

PROPORTION OF TASK-ORIENTED BEHAVIOURS OF HIGH AND
LOW LPC LEADERS AND THEIR GROUPS



of these findings is difficult to evaluate due to the absence of any data on the reliability and validity of the leader behaviour categories. In addition, the classification and ordering of the situational variables seem somewhat arbitrary. When taken together with the fact that these data combine the behaviours of the leaders with their group members, it seems necessary to conclude that these data are irrelevant to any consideration of the behavioural significance of LPC scores.

6.3 Meuwese and Fiedler (unpub.)

The subjects of this investigation were students in the Reserve Officer Training Corps (ROTC). They were assembled into fifty-four three-man groups and randomly assigned to one of three conditions. The 'low stress' condition involved groups of army cadets, dressed in civilian clothes, with the highest ranking person appointed as group leader. In addition, the group members were assured that their careers would not in any way be affected by their performance on this task. An 'internal stress' condition was constructed which involved groups consisting of two army cadets and a navy midshipman. Each subject was in uniform to emphasize the inequality in ranks, and the lowest ranking person was appointed group leader. The 'external stress' condition involved uniformed army cadets with the highest ranking cadet as the appointed leader. The stress manipulation was effected by having high ranking military officers in plain view of group members observing and rating the group activities. No explanation was given to the subjects as to why the officials were present.

Of the eighteen groups in each condition, half were led by 'high' LPC leaders and half by 'low' LPC leaders (scores not given). Each group performed two tasks (in the same order), and after each task session they completed a 17-item group atmosphere scale. These data were then used to

classify groups according to whether their leader's group atmosphere (GA) scores were relatively high, medium or low. Whilst details of the GA scores were not given, Fiedler (1967) noted that:

Even the GA scores which fell into the upper half of the distribution - and which were supposedly high - were below the mean scores of groups with low group atmosphere in other studies conducted with college students . . .
(Page 124)

In addition, since the GA scores were stratified within each of the stress conditions, this probably resulted in different (sample-bound) definitions of the three levels of GA.

In two of the 'stress' conditions, low stress and external stress, observer ratings of leader-member interactions were obtained. This was achieved by the use of six categories indicating the degree to which the leader: promoted group 'participation', exhibited 'democratic' leadership, promoted group cohesiveness, produced new ideas, integrated ideas by others, and exhibited 'authoritarian' leadership. Four of these categories were judged to be dealing with 'relationship-oriented' behaviours (promotes participation, and democratic leadership) and 'task-oriented' behaviours (produces ideas, integrates ideas). The number of behaviours within each category (presumably summed across tasks) was calculated as a proportion of the total number of behaviours (see Table 16).

TABLE 16
LPC SCORES, LEADER BEHAVIOUR AND THE LEADERSHIP SITUATION

Behaviour Categories	Leader LPC	Low Stress				External Stress							
		Hi	GA	Med	GA	Lo	GA	Hi	GA	Med	GA	Lo	GA
<hr/>													
Group													
Participation	Hi	9.6		19.5		11.7		17.5		12.5		25.3	
	Lo	24.4		10.5		10.7		22.9		13.3		19.3	
Democratic													
Leadership	Hi	11.8		15.8		18.1		8.5		9.6		9.8	
	Lo	16.0		19.3		16.6		16.3		6.6		4.8	
New Ideas	Hi	18.1		19.9		20.4		22.4		18.3		11.6	
	Lo	16.2		12.6		14.1		21.7		22.5		22.3	
Integrates Ideas	Hi	55.3		40.5		43.9		47.0		53.4		45.2	
	Lo	38.5		53.9		49.3		38.1		48.7		46.6	

Source: Fiedler 1967, page 190. Analysis by Meuwese and Fiedler.
See Figures 19 and 20.

Meuwese and Fiedler derived a 'task-oriented' score and a 'relationship-oriented' score for the high and low LPC leaders in each of the experimental situations. These scores were then graphed (see Figures 19 and 20), each point being the 'average percent of comments made by the leaders of three different groups on both tasks' (Fiedler, 1967: page 190).

Once again an analysis of variance would have been useful in evaluating these data. In the absence of such an analysis or any form of significance testing the results seem to indicate that high and low LPC leaders differ from each other in the relative proportion of their task-oriented and relationship-oriented behaviours in some, but not all, situations. Second, both high and low LPC leaders change the proportion of their behaviours which they devote to the 'task' and to 'relationships'

FIGURE 19

FIEDLER 1967: REPRESENTATION OF RELATIONSHIP-ORIENTED DATA

ANALYSED BY MEUWESE AND FIEDLER

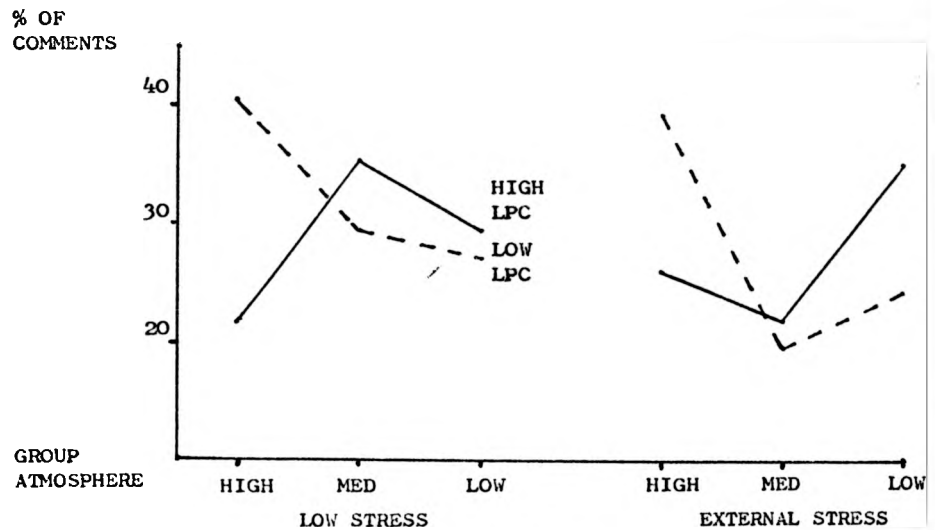
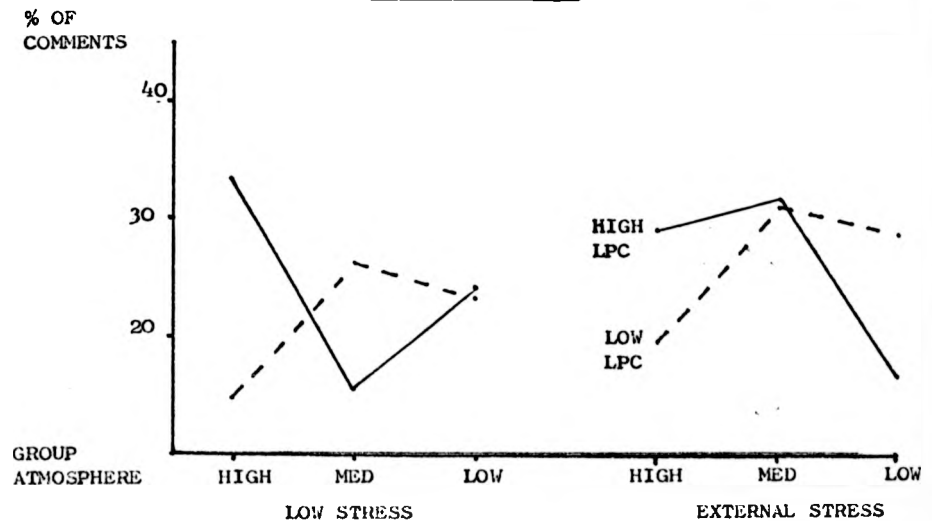


FIGURE 20

FIEDLER 1967: REPRESENTATION OF TASK-ORIENTED DATA ANALYSED

BY MEUWESE AND FIEDLER



STUDY BY MEUWESE AND OONK

SOURCE: FIEDLER, 1967 PAGE 190

according to the situation they are in. Finally, both high and low LPC leaders devote a relatively greater proportion of their behaviours to the task than to relationships. This is the case whatever the situation.

Fiedler's interpretation of the data was rather different inasmuch as he implicitly assumed a dimension of situational favourableness (see Figures 19 and 20).

[The] high LPC leaders made fewer relationship-oriented comments than low LPC leaders in group situations which they considered relatively free of stress and relatively pleasant. However, high LPC leaders made more comments of this type than low LPC leaders in more stressful situations. . . .

The opposite is the case with task-oriented comments . . . the low LPC leaders made relatively fewer task-oriented comments than high LPC leaders in the relatively relaxed group situations. Low LPC leaders made more task-oriented comments than high LPC leaders in the relatively more stressful group situations. (Fiedler, 1967: pages 190-91)

Such an interpretation leads to questions regarding the validity of the assumed dimension of situational favourableness. Since Fiedler himself in a later study (Fiedler, O'Brien and Ilgen, 1969) ordered these two 'situational' variables in an entirely different way (see page 4³), it seems that the ordering is somewhat arbitrary.

Ignoring Fiedler's interpretation of the results, the question remains as to the validity of the alternative interpretation proposed on page 91. This seems to depend primarily on the reliability and validity of the leader behaviour categories which were used. No data were provided on these issues. In the absence of such information, it is tentatively concluded that these results should be taken into consideration when evaluating the behavioural significance of LPC scores.

6.4 Conclusions: LPC Scores and Observations of Leader Behaviour
Using Categories Other than those of Bales

Having rejected the data analyses reported by Meuwese and Oonk (see page 89), the results obtained by Fiedler et al. and Meuwese and Fiedler indicate the following conclusions:

- a) In some defined situations, high and low LPC leaders differ from each other in the proportion of their interactions which they devote to the task and to interpersonal relationships.
- b) Both high and low LPC leaders differ within themselves in the ways in which they behave in different situations.
- c) Both high and low LPC leaders direct a greater proportion of their comments towards the task than towards 'relationships', whatever the situation.

These conclusions rest on the minimal assumption that the 'situations' concerned do in fact differ from each other. No assumptions are made about the way in which they differ. Other, more detailed, conclusions could be derived from these data regarding specific behaviours in specific situations. For example, one could conclude that low LPC leaders devote a relatively high proportion of their behaviours to 'relationships', and a relatively low proportion of their behaviours to the 'task', in 'low stress' situations, whilst high LPC leaders do the opposite. However, the validity of such conclusions is crucially dependent on the validity of the situational classifications. Since no data are available on this matter, it seems wiser to adopt the above, more conservative, interpretation.

7. CONCLUSIONS: RELATIONSHIPS BETWEEN LEADER LPC SCORES AND LEADER BEHAVIOUR

At the beginning of this chapter it was noted that no consistent relationships had been found between LPC and other variables (apart from leadership effectiveness). It was also noted that Fiedler's (1958) interpretation of the meaning of LPC scores had direct implications for leadership behaviour: low LPC leaders were suggested to be controlling, directive, and 'task-oriented'; high LPC leaders were seen to be permissive, considerate, and 'interpersonally-oriented'. However, the evidence cited in this chapter shows the relationship between LPC scores and behaviour to be more complex. In particular, the data indicate that situational variables moderate the relationship between LPC scores and leader behaviour. Perhaps this is not surprising in view of the fact that LPC/effectiveness correlations are moderated by situational variables.

A number of research issues were noted at the start of this chapter (page 63). To these should be added a further possibility: that high and low LPC leaders exhibit some consistencies in their behaviour whatever the task conditions. These issues will now be examined in light of the research findings reported in this chapter.

7.1 Research Findings: General Trends

On the whole, where researchers have performed similar analyses using different measurement techniques, the results have suggested the same general conclusions regarding the relationships between leader LPC scores and leader behaviour. These conclusions are described in detail in Tables 17 and 18.

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TABLE 17

CONCLUSIONS FROM OBSERVATIONAL STUDIES

	Process Analysis		Supported by Subordinates' Descriptions
	Bales	Other	
<u>Situations</u>			
1. In <u>some</u> defined situations, hi and lo LPC leaders differ from each other in the proportion of their interactions which they devote to <u>some</u> specific (but not all) sorts of behaviour.	✓	✓	✓
2. Both hi and lo LPC leaders differ within themselves in the ways in which they behave in different situations.	✓	✓	✓
3. Both hi and lo LPC leaders direct more of their interactions to the task than to relationships <u>whatever the situation</u> .	✓	✓	Not studied
<u>Phases</u>			
1. Hi and lo LPC leaders differ from each other in the proportion of their interactions which they devote to defined behaviours <u>within a phase</u> .	✓	Not studied	Not studied
2. Both hi and lo LPC leaders differ within themselves in the frequency with which they perform defined behaviours in <u>different phases</u> .	✓	Not studied	Not studied
3. Hi and lo LPC leaders differ from each other in the <u>patterning</u> of their behaviours <u>across phases</u> .	✓	Not studied	Not studied
4. When phases within a situation are combined, hi and lo LPC leaders do not appear to differ from each other in their frequency task and socio-emotional behaviours.	✓	Not studied	Not studied

TABLE 18

CONCLUSIONS FROM SUBORDINATES' DESCRIPTIONS
OF LEADER BEHAVIOUR

	Supported by Results from Observational Studies
1. Descriptions of leader behaviour which are not situation-specific show no differences between high and low LPC leaders in the overall frequency of their structuring and consideration-type behaviours.	✓
2. High and low LPC leaders differ from each other in the frequency with which they perform certain behaviours in certain situations (Fiedler <u>et al.</u>).	✓
3. High and low LPC leaders vary their behaviour from one situation to another (Graham, Fiedler <u>et al.</u>).	✓
4. In some situations, high and low LPC leaders differ from each other in the proportion of their structuring behaviours (Fiedler, O'Brien and Ilgen).	✓
5. Descriptions of consideration behaviours by the subordinates of low LPC leaders are significantly more variable than the descriptions provided by the subordinates of high LPC managers (Graham).	Not relevant

a) Situation effects

The first point to note is that in some situations, high and low LPC leaders differ from each other in the proportion of their interactions which they devote to certain, defined sorts of behaviour. Secondly, high and low LPC leaders vary their behaviour from one situation to another. Given these variations in behaviour, it is not surprising that no consistent relations have been found between LPC scores and behaviour - the moderating effect of the situation was never taken into account.

b) Phase effects

When a task session is divided into phases according to some criterion (e.g. three equal time-periods), variations in leader and group behaviour have previously been found to be associated with variations in phase. Such findings have been obtained with problem-solving groups (Bales and Strodtbeck, 1951) and negotiating teams (Landsberger, 1955). The studies by Sample and Wilson (1965) and Gruenfeld et al. (1969) make it possible to determine whether this is more generally the case.

Very similar results were obtained in these two studies. High and low LPC leaders differ from each other in the way they behave during a particular phase, and they vary their behaviour from one phase to the next. Furthermore, they vary their behaviours in such a way that they differ from each other in the overall patternings of their behaviours across phases.

These findings are of particular significance when taken in conjunction with Sample and Wilson's finding that when leader interactions are combined across phases, and overall scores derived for the proportion of 'task-oriented' and 'socioemotional' behaviours, high and low LPC leaders do not differ from each other. When taken together, these findings suggest that even when high and low LPC leaders do not appear to differ from each other in the way they behave in a given situation, it may be that differences between them will be found when the interactions in that situation are divided into phases.

7.2 Research Findings: 'One-Off' Results

In some of the observational studies analyses were performed which showed that both high and low LPC leaders directed more of their inter-

actions to the task than to relationships whatever the phase (Sample and Wilson, 1965), or the situation (Mauwese and Fiedler).

These results suggest that descriptions of leader behaviour (obtained from e.g. subordinates) which are aggregate perceptions of the leader's behaviour in a variety of situations may be very misleading. This is because such measurement techniques fail to reflect the relative proportion of the leader's behaviour which he devotes to the task and to relationships.

Graham (1968) reported that high and low LPC leaders do not differ from each other in the frequency with which they engage in structuring and consideration behaviours. However, in section a it was noted that high and low LPC leaders do differ from each other in some situations, and furthermore that they vary their behaviour from one situation to another. The difference between these results again demonstrates one of the misleading properties of paper and pencil measures when they are used to obtain an 'overall perception' of leader behaviour, based on the subordinates' experience of that leader in a variety of situations. When used in this way, questionnaires obscure variations in leader behaviour.

A second finding reported by Graham (1968) was that the descriptions of consideration behaviours obtained from subordinates of low LPC leaders were significantly more variable than the descriptions provided by the subordinates of high LPC leaders. Graham interpreted this result as showing that low LPC leaders direct their behaviour towards certain group members, whilst high LPC leaders were more generally 'considerate' to all group members. Once again, the fact that the subordinates' descriptions of their leader's behaviour were based on their experiences in a variety of situations renders this interpretation questionable. An alternative interpretation of these results would be that low LPC leaders vary

their consideration behaviours more with variations in the situation than do high LPC leaders. Which is the more valid interpretation is unknown.

7.3 Research Findings: Implications for LPC as a Predictor Measure of Leadership Effectiveness

These results indicate that LPC scores do have behavioural significance. When taken in conjunction with the fact that sizeable correlations have been obtained between LPC scores and leadership effectiveness, it seems that LPC may be a useful predictor. However, this will only be the case once a valid taxonomy of leadership situations is produced and a new contingency described.

Having established that LPC scores do reflect differences in leadership behaviour, it seems worthwhile to pursue the question as to why this is the case. It may be that the answer will be found in differences between high and low LPC leaders in their status on some underlying construct such as motivation or information-processing ability.

For example, high and low LPC leaders may behave differently because they differently perceive the demands of a given situation and act in accordance with their perceptions, or because they similarly perceive the demands of a given situation but have characteristically different modes of responding to it. (Fishbein et al., 1969: page 460)

In the following chapters, two major interpretations of LPC in terms of underlying constructs will be examined. It is hoped that this will produce some further developments in our understanding of why LPC scores are associated with leadership effectiveness.

CHAPTER 4

INTERPRETATIONS OF THE MEANING OF LPC SCORES INVOLVING MOTIVATIONAL VARIABLES

Studies designed to investigate the relationship between leader LPC scores and leader behaviour were reviewed in Chapter 3. It was concluded that whilst high and low LPC leaders appear to behave differently from one another, these differences vary from situation to situation. It follows that any serious attempt to interpret the meaning of LPC scores must be able to deal with variations of this sort.

Fiedler has proposed three different interpretations, each able to do this job. Two involve motivational constructs and will be critically reviewed in this chapter. The third explanation focusses on 'cognitive complexity' and will be considered in Chapter 5.

1. FIEDLER'S MOTIVATIONAL INTERPRETATION OF LPC SCORES

According to Fiedler (1967), a high LPC leader 'derives his major satisfaction from interpersonal relationships;' whilst the low LPC leader 'derives his major satisfaction from task performance.' Fiedler hypothesized that leaders would vary their behaviour from one situation to another in order to satisfy these underlying 'motives'.

One of the ways in which this interpretation differs from the one he proposed in 1958 (see Part II, page 59) is that in any given situation high and low LPC leaders need not necessarily behave differently from each other. This is because Fiedler assumed that the same behaviours may be employed in order to satisfy different motives. In other words, in a given situation both high and low LPC leaders may employ 'task-oriented' behaviours to an equal degree. However, the high LPC leader would be doing so in order to develop good relationships with his group members, whilst

the low LPC leader would be doing so in order to accomplish the task (Fiedler, 1967: page 46).

Unfortunately this interpretation is untestable, since no observation of leader behaviour can fail to 'support' Fiedler's hypothesis. Some other interpretation is therefore required.

2. FIEDLER'S GOAL-HIERARCHY INTERPRETATION OF LPC SCORES

The LPC score generally has been interpreted as measuring a task versus relationship orientation. This interpretation, based primarily on weak observational data and leader descriptions, turns out to present an approximate but grossly oversimplified picture. (Fiedler, 1972: page 392)

Instead, Fiedler suggested that the LPC score reflected a goal or motivational hierarchy. The high LPC leader was still viewed as being motivated to seek close interpersonal relationships. However, this was now seen as being his 'primary goal'. In addition, a 'secondary goal' was postulated which was suggested to be 'the approval and admiration of others and the attainment of a position of prominence' (Fiedler, 1971b: page 11). The low LPC leader was still regarded as being motivated to seek successful accomplishment of the task. However, this was now seen as being his primary goal which was associated with a secondary goal - the achievement of 'good interpersonal relationships' (ibid.).

With respect to the relationship between leaders' goals and their behaviour in different situations, Fiedler suggested that both high and low LPC leaders would behave in ways designed to meet their primary goals in 'relatively unfavourable' situations (low SF). However, in favourable situations (high SF) they would seek to satisfy their secondary goals.

In order to test Fiedler's (post-hoc) interpretation, a detailed specification of the behaviours associated with each goal is required. This has not been provided. In particular, identification of those behaviours necessarily employed by high LPC leaders to achieve their secondary goal

of 'prominence', 'approval and admiration' seems problematic. For example, they could engage in 'task-oriented' behaviours in order to achieve 'prominence' and 'approval' through successful performance of the task. However, it seems equally reasonable to assume that they might seek to satisfy their secondary goal by emphasising 'relationship-oriented' behaviours and thereby developing 'good' interpersonal relations. Without further definition, this part of the 'theory' is untestable.

Fiedler has failed to adopt a consistent view on this issue. For example, one of the studies he cited in support of his interpretation was by Sample and Wilson (1965). These authors found that high LPC leaders increased their 'task-oriented' behaviours and reduced their 'relationship-oriented' behaviours in a situation where, according to Fiedler, they were seeking to achieve their secondary goal (see page 100). This suggests that Fiedler expects high LPC leaders to employ task-oriented behaviours to achieve their secondary goal.

However, Fiedler (1967) stated that high LPC leaders were 'concerned with having good interpersonal relations and with gaining prominence and self-esteem through these interpersonal relations' (page 45, my italics). The implication of this statement is that high LPC leaders employ relatively high levels of 'relationship-oriented' (as opposed to 'task-oriented') behaviours to achieve both their primary and secondary goals. However, the goal-hierarchy interpretation was developed in order to 'explain' the apparent lack of behavioural consistency across situations. Therefore it seems Fiedler's prediction must be that high LPC leaders use task-oriented behaviours to achieve their secondary goal.

2.1 The Goal-Hierarchy Interpretation: Underlying Assumptions

Fiedler (1972) evaluated the support for his goal-hierarchy interpretation by examining the observed relations between LPC scores, observations of leader behaviour and various paper and pencil measures. His interpretation

of the data derived from paper and pencil measures depends upon a number of assumptions which will now be described.

First, Fiedler sorted the data from paper and pencil measures into what he assumed to be two, mutually exclusive, categories:

- a) individuals' self-reports; and
- b) 'indirect personality tests' and other people's descriptions of the leader's behaviour.

Next, he assumed that individuals' self-reports 'reflect' their goals and behaviour in 'favourable' situations (high SF). The results of indirect personality tests and other people's descriptions of the leader's behaviour were assumed to reflect the leader's goals and behaviour in 'unfavourable' situations.

Fiedler's supporting argument was as follows. Subjects' self-reports reflect their perceptions of themselves in situations where they have relatively high levels of influence, i.e. 'secure situations' (Fiedler, 1972: page 394). Such situations are, by definition, favourable to the leader (see Chapter 1, page 12). Therefore self-report measures reflect an individual's goals and behaviour in favourable situations. Indirect personality tests and others' descriptions of the leader, Fiedler assumed, present a 'stressful' or 'threatening' situation for the subject. In consequence, the results of such measures reflect the leader's goals and behaviour in unfavourable situations.

The extent to which Fiedler's goal-hierarchy interpretation derives support from the paper and pencil data depends on the validity of his assumptions and arguments. There are several reasons for doubting them.

The first concerns Fiedler's definition of 'self-reports' and in particular his distinction between these and 'indirect personality tests'. The problem seems to be, when is a self-report not a self-report but an indirect personality test. For example, Mitchell (1970a) investigated

relations between LPC scores and leaders' scores on a measure of 'cognitive complexity'. This was a measure of the self-report type and yet Fiedler classified it as an 'indirect personality test' (Fiedler, 1972: page 396). Other examples can be cited. This deficiency is serious since data support or fail to support Fiedler's hypotheses depending on the category to which they are assigned.

A second difficulty concerns Fiedler's assumption that individuals' self-reports reflect their behaviour in 'favourable' situations, whilst indirect personality measures etc. reflect the leader's behaviour in 'unfavourable' situations. This assumption lacks a theoretical or empirical base, and appears highly implausible. For example, consider Fiedler's claim that other people's descriptions of a leader reflect that leader's goals and behaviour in unfavourable situations. One of the studies he quoted was by Graham (1968). This was a field study where subordinates were required to rate their leader's behaviour, using the LBDQ (see page 104). This task requires the raters to provide some normative description of how they perceive their leader to behave. Fiedler's assumption is that raters find such a task 'stressful' and therefore describe their leader's behaviour in a stressful situation. It is not at all clear why this should be the case.

2.2 Empirical Evaluation of the Goal-Hierarchy: General Issues

In order to establish the empirical substance of his revised interpretation, Fiedler (1972) reviewed data from a variety of sources. Two general points should be made about the significance of these data.

The first concerns the coherence of Fiedler's predictions. It was often not possible to deduce exactly what his predictions were regarding the relationship between LPC scores and scores on other variables. In consequence it was difficult to assess quite what the observed relations indicated

regarding the validity of Fiedler's goal-hierarchy interpretation (see in particular sections 2.5, 2.6, and 2.8).

The second point concerns the strength of Fiedler's predictions and the consequent significance of the data. Fiedler predicted that leaders in favourable situations seek satisfaction of their secondary goal. However, he did not exclude the possibility that they might also seek to satisfy their primary goal (Fiedler, 1972: pages 393 and 394). Consequently, data can be claimed to 'support' Fiedler's interpretation whichever way they point.

The studies to which Fiedler (1972) referred will now be examined in order to establish what light they cast on the significance of Fiedler's interpretation of LPC scores. Since many of the studies have been examined in detail in Chapter 2, they will be described only briefly.

2.3 Evaluation of the Goal-Hierarchy Interpretation: Evidence from Self-Reports

In support of his claim that self-reports reflect a leader's secondary goal, Fiedler referred to the results of four studies. Of these, three were unpublished (Bass et al., 1964; Bishop, 1964; and Nealey, 1968). Since the study by Bass et al. has been described in some detail (Fiedler, 1967) it will be reviewed along with the study by Fiedler, O'Brien and Ilgen (1969).

Bass et al. correlated LPC scores with data obtained from a wide variety of paper and pencil measures. One of these was the personality orientation inventory devised by Bass (1961). Fiedler (1972, page 395) interpreted the correlations between scores on this measure and LPC scores as supporting his prediction. However, the correlations referred to (but not quoted) by Fiedler were +.11 (not significant) and -.16 ($p < .05$). It is concluded that these correlations provide negligible support for Fiedler's hypothesis since the largest accounts for only 2.6 per cent of the total variance.

In the study by Fiedler et al., the data to which Fiedler (1972) referred were not reported. They reflected relationships between LPC scores and scores on the Higgs Prominence Scale (Higgs, 1965; unpub.). Examples of items in the Higgs Scale are: I like personal praise (prominence), I would like to be written about in a newspaper story (prominence), I would like to be a capable person (achievement), and I work well when I work on a challenging problem (achievement).

Nine of twelve prominence items were answered significantly more positively by high than low LPC subjects; and twelve of thirteen achievement items were answered significantly more positively by low than high LPC subjects. (Fiedler, 1972: page 395)

Assuming that the scales are sufficiently reliable and valid, these data seem to indicate that the low LPC leaders responded in a manner indicative of their primary motivation (task achievement), whilst the high LPC persons' responses reflected their presumed secondary motivation. Fiedler claimed that these results supported his goal-hierarchy interpretation of LPC scores. However, the prediction is not a powerful one since the results can be claimed to support his prediction whichever way they point.

2.4 Evaluation of Goal-Hierarchy Interpretation: Indirect Personality Tests and Descriptions of Leader Behaviour

Fiedler claimed that data from these sorts of measure support his prediction that leaders seek to achieve their primary goal in unfavourable situations.

Of the eight studies he cited, three were published (Graham, 1968; Fishbein et al., 1969; and Mitchell, 1970a) and one was described in detail in a secondary source (Bass et al., 1964).

Graham (1968) used the LBDQ to obtain subordinates' descriptions of their leader's behaviour (see Chapter 3, page 61). No significant differences were found between high and low LPC leaders in the mean level

of their structuring and consideration behaviours. Yet both Fiedler and Graham concluded that the results indicated that 'high LPC leaders tend to be primarily human-relations oriented whereas low LPC leaders tend to be more task-oriented' (Graham, 1968: page 462). However, this conclusion is not a valid interpretation of the data and therefore fails to support Fiedler's primary goal hypothesis.

Fishbein et al. (1969) required male undergraduates to list the qualities they felt their least preferred coworker to possess. Each of the qualities was rank-ordered according to the frequency with which they were used by high and low LPC persons. When this was done, two different pictures emerged. High LPC persons described their least preferred coworker as someone who is 'bullheaded, dogmatic, must have own way; . . . avoids work, goofs off, wastes time; lazy, talks too much' (Fishbein et al.: page 181). Low LPC persons described their least preferred coworker as being 'not intelligent; lazy; not friendly, unpleasant, obnoxious; self-centered, egotistical; personally dirty, messy, sloppy' (ibid.: page 182). Fiedler (1972) interpreted these results as showing that:

the high LPC leader tends to be threatened by someone who might compete for group leadership while a low LPC leader is threatened by someone who would frustrate the efficient performance of the task. (Page 397)

Whilst any conclusions based on data of this kind must be tentative, the descriptions seem to suggest that both high and low LPC persons have a personal dislike for their least preferred coworker and associate him with poor task performance. In addition, high LPC persons seem to regard their least preferred coworker as being someone who frustrates their attempts to direct task activities. Even if it were assumed that these data reflect leaders' goals in unfavourable situations, they can hardly be claimed to demonstrate that the primary goal of low LPC leaders is task performance, whilst the primary goal of high LPC leaders is good interpersonal relations.

Mitchell (1970a) got American university students to complete LPC scales and a questionnaire designed to evaluate the extent to which they differentiated within a domain of objects, in this case the objects being groups. He found a significant correlation of +.51 ($p < .025$) between these two measures from which he inferred that high LPC persons differentiate more (in this particular domain of objects) than low LPC persons. Fiedler (1972) claimed that these findings supported his goal-hierarchy interpretation. He rested his claim on the premise that people differentiate more highly within an area with which they are particularly concerned than they do in other areas. Therefore:

Since groups and other individuals are the basis for social support, the high LPC person's ability to categorise and to think analytically about groups and certain coworkers would imply that his concern with them is greater than that of the low LPC person. This would be consistent with the notion that the high LPC person views others as instrumental to his primary motivation for relatedness to his work group. (Fiedler, 1972: page 397)

However, this argument seems extremely weak. For example, even if Fiedler's premise were valid, why should not low LPC persons also 'think analytically about groups'? It seems an equally valid a priori suggestion that they should do so if their primary motive is successful performance of the task. This is because the work group provides the vehicle for task achievement. Furthermore, since the secondary goal of low LPC persons is said to be good interpersonal relations it seems equally valid to assume that they would differentiate between the diverse characteristics of groups. It is therefore concluded that the results of Mitchell's study have no bearing on the validity of Fiedler's goal-hierarchy interpretation.

The study by Bass et al. was quoted by Fiedler (1972) in his review of evidence from self-report measures. However, he also cited some of the same results in his review of studies which used indirect personality tests. It seems unreasonable to treat the same data as relevant to both

(supposedly mutually exclusive) categories. The results from the study by Bass et al. are therefore considered irrelevant in this context.

Fiedler claimed that the results of these, plus the other four unpublished studies, 'show the high LPC person as concerned with interpersonal relations and the low LPC person as concerned with performance' (Fiedler, 1972: page 396). Having reviewed the available studies, it seems impossible to agree with him.

2.5 Evaluation of Goal-Hierarchy Interpretation: Leader Reactions to Success and Failure

A number of studies have been conducted in which evidence was obtained regarding leaders' reactions to success or failure in task performance or interpersonal relations. Fiedler (1972) cited the results of these studies in support of his claim that the primary goal of high LPC leaders is good interpersonal relations, whilst low LPC leaders have as their primary goal successful accomplishment of the task. However, Fiedler did not explain why the results of such studies should reflect leaders' primary goals, nor did he make explicit exactly what his predictions were. Furthermore, it seems generous to interpret data in support of a theory when the results were not predictable on the basis of that theory.

Fiedler (1972) cited the results of three studies in support of his claims. One of these studies was unpublished (Bishop, 1964), and the remaining two, though published, contained no mention of the analyses referred to by Fiedler (Myers, 1962; McGrath and Julian, 1963). However, Fiedler failed to cite the results of a study by Ninane and Fiedler (1970). This study, like those to which Fiedler referred, also dealt with leader reactions to task success.

The subjects of the study by Ninane and Fiedler (1970) were 75 school-boys assembled in three-person groups. After they had performed the task each subject received a note, seemingly from a panel of judges, which

indicated that the group had done well ('success' condition) or poorly ('failure' condition). Each subject was then required to rate other group members, the task itself, the importance of the results, themselves and their satisfaction with the experiment.

Overall, the findings showed no differences between high and low LPC leaders in their response to the communication that they had successfully performed the task. In this sense these results seem to differ from those to which Fiedler (1972) referred (Bishop, unpub.; Myers, 1962; and McGrath and Julian, 1963).

The results with respect to task failure were rather different. Both the high LPC leaders and their group members reacted more strongly to news of failure than did the low LPC leaders and their members. Whilst Ninane and Fiedler (1970) interpreted these results as showing that high LPC leaders are strongly influenced by social evaluation, this 'explanation' is inadequate. This is because it fails to explain why differences between the group members were found and why low LPC leaders were unresponsive given that their primary goal is supposed to be task achievement.

In conclusion, it seems that the results of studies involving leaders' reactions to success and failure are confused and difficult to interpret. Furthermore, if Fiedler wishes to use the results of such studies in support of his goal-hierarchy interpretation he should make clear:

- (i) what his predictions are;
- (ii) the logical/theoretical/empirical basis of his predictions; and
- (iii) what findings would constitute non-confirming instances.

Until this is done, the results of such studies are irrelevant to any serious consideration of the meaning of LPC scores.

2.6 Evaluation of Goal-Hierarchy Interpretation: Leader Reactions to the Group - New Analyses

In search of empirical support for his goal-hierarchy hypothesis, Fiedler (1972) referred to new analyses of data from three earlier studies. However, the results, as reported, were uninterpretable and had no obvious relevance to Fiedler's goal-hierarchy hypothesis. For example, from the results of a study by Julian, Bishop and Fiedler (1966), Fiedler concluded:

the high LPC leader who attends to the task does so seemingly at the cost of poor relations with his group. The low LPC leader can, however, be both task oriented as well as having good relations with his unit. (Fiedler, 1972: page 399)

Quite why these results have any bearing on the validity of the goal-hierarchy hypothesis is difficult to imagine.

2.7 Evaluation of Goal-Hierarchy Interpretation: Observations of Leader Behaviour

Fiedler reviewed the following studies: Fiedler, Meuwese and Oonk (1961), Meuwese and Fiedler (unpub.), Sample and Wilson (1965), Fiedler (1966), and Hawley (unpub.). Fiedler also cited a number of other studies and claimed that their results were consistent with his predictions (e.g. Gruenfeld, Rance and Weissenburg, 1969; Fiedler, O'Brien and Ilgen, 1969).

With one exception (Hawley, unpub.) these studies have been reviewed in Chapter 3. Two points may be made regarding their results and Fiedler's interpretation of them.

The first concerns the studies by Hawley (unpub.) and Fiedler et al. (1969). In both of these studies, leadership behaviour was measured by obtaining subordinates' descriptions. These were assumed to have been obtained in situations which varied in their favourableness for the leader - some situations being 'favourable' and some 'unfavourable'. However, one of the basic assumptions on which the goal-hierarchy interpretation rests is that subordinates' descriptions reflect their leader's behaviour in

unfavourable situations. It is clearly rather anomalous to make this assumption and then claim that the favourableness of the situation varies in such studies. For this reason, their studies are irrelevant to any evaluation of Fiedler's behavioural predictions.

The second point is more general one. It concerns the fact that in attempting to deduce general trends from the studies where more than one leadership situation was examined, Fiedler made (implicitly) at least four assumptions. These have been described elsewhere in this thesis, however, since they are crucial to Fiedler's interpretation of the leader behaviour data they will be mentioned again. They are as follows.

- (a) The situational variables which have been used (e.g. group homogeneity/heterogeneity, 'stress', emergent leader/appointed leader, high and low group atmosphere) are all significant determinants of the 'favourableness of the situation' (SF) as defined by Fiedler (1967).
- (b) That the levels at which these situational variables are stratified varies from study to study (see page 12) is not critical to the validity of the definition of SF.
- (c) Ordering the same variable in different ways in different studies has no significant effect on the validity of the definition of SF.
- (d) It is valid to treat different combinations of a variety of situational variables as resulting in a range of SF which varies from high to low.

When reviewing the studies of leader behaviour in Chapter 3 it was held that these assumptions were untenable, and that as a result, no dimension of SF could be induced from different situational 'manipulations'. Given this viewpoint, it is impossible to test the validity of Fiedler's predictions regarding the relationship between LPC scores, leader behaviour and situational favourableness. Instead, all that can be said is that such studies show high and low LPC leaders differ within themselves in the way

they behave in different situations, and that in some situations they differ from each other (see Table 17 , page 94). Whilst these results support an interpretation of the meaning of LPC scores in which it is hypothesized that both high and low LPC leaders vary their behaviour, they cannot be claimed in support of Fiedler's goal-hierarchy interpretation. For this reason, a satisfactory explanation of the observed relationships between LPC scores and leader behaviour remains to be found.

2.8 Evaluation of Goal-Hierarchy Interpretation: Evidence from Studies of the Effects of Training on Leader Behaviour

Fiedler (1972) suggested that training increases the favourableness of the situation and therefore improves the performance of some leaders (who move from an 'inappropriate' situation to an appropriate one) and worsens the performance of others. In addition, he suggested that training, by changing the situation, causes leaders to change their behaviour.

Since, according to Fiedler, high and low LPC leaders behave differently in different situations, training will have different effects on their behaviour. He claimed that these effects were predictable on the basis of his goal-hierarchy interpretation, and quoted the results of two studies in support of his predictions (Chemers, Fiedler and Lekhyananda, 1966; Chemers, 1969).

The first point to make regarding Fiedler's arguments is that it is not at all clear exactly what his predictions were regarding the effects of training on leader behaviour. It is therefore impossible to evaluate the extent to which the results support his goal-hierarchy interpretation.

A second and equally important point concerns the fact that Fiedler's argument and predictions depend upon an assumed dimension of situational favourableness. However, for reasons which have already been given (see page 17) a dimension of favourableness cannot be induced from different situational manipulations.

For these reasons it is concluded that examination of the effects of training on leader behaviour is irrelevant to any empirical evaluation of Fiedler's goal-hierarchy hypothesis.

2.9 Conclusions : Validity of Fiedler's Goal-Hierarchy Interpretation

The arguments and evidence presented in this chapter suggest that the goal-hierarchy interpretation is open to a number of powerful criticisms and that it lacks empirical support.

With respect to the adequacy of the 'theory' and Fiedler's deductions from it, it seems necessary to conclude that the theory is not stated in an easily testable form. In addition, the underlying assumptions lack any theoretical or empirical basis, are implausible, and are inconsistently applied (see page 94). A related point concerns Fiedler's predictions regarding the relationship between leader LPC scores, leader behaviour, and situational favourableness: these rest on a number of untenable assumptions and as a result are not open to empirical verification.

Regarding the data which Fiedler claimed in support of his theory, it is concluded that his interpretation is not justified by the data themselves. Furthermore, since it is not always clear exactly why he regards certain sets of data as supporting his predictions it is difficult to assess the extent to which they have empirical support.

For these reasons, it is not possible to agree with Fiedler's conclusion that 'we may have begun at long last to unravel the enigma of the least preferred coworker score' (Fiedler, 1972: page 406). Instead it seems that a valid explanation of the correlations between LPC scores, leader behaviour and leadership effectiveness is yet to be found.

CHAPTER 5

INTERPRETATION OF THE MEANING OF LPC SCORES
IN TERMS OF COGNITIVE DIFFERENTIATION

1. INTRODUCTION

A number of different authors have suggested that LPC scores might reflect the complexity of individuals' interpersonal perceptions. As early as 1961, Bieri suggested the least preferred coworker questionnaire to be 'another possible method of measuring cognitive complexity' (page 370).

Fishbein, Landy and Hatch (1969) made a similar suggestion by proposing that LPC be viewed as an attitude score.

Viewing LPC as an attitude score suggests that . . . LPC should be related to various measures of an individual's cognitive structure. (Page 174)

In 1967, Schroder, Driver and Streufert summarised the implications of earlier work by proposing that:

(the) measure of the 'least preferred coworker' may represent a gross, but simple and fast measure of the complexity of attitude structure in interpersonal situations. (Page 134)

Recently, Fiedler has extended this general line of argument to provide a 'supplementary' interpretation of LPC scores in terms of cognitive differentiation (Foa, Mitchell and Fiedler, 1971). The rationale which underlies this interpretation follows from the ways in which particular LPC scores are obtained. As has been noted, the LPC scale consists of task-related and interpersonal-related adjectives (see page 13)

Respondents are instructed to describe the person with whom they have had 'the most difficulty in getting a job done'. This instruction leads most people to describe their LPC in an unfavourable light (give low scores)

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on task-related items (Foa et al., 1971). If, however, the respondent differentiates between task performance and interpersonal qualities, he may also describe his LPC in a favourable way on interpersonal items. Since in all Fiedler's LPC scales the majority of items are interpersonal, the differentiating respondent will obtain a high LPC score.

The purpose of this chapter is to describe and evaluate Fiedler's latest interpretation of LPC/ASO scores in terms of cognitive differentiation. However, before doing this it is necessary to explain what is meant by 'differentiation' and describe how the concept is usually measured. This is done in sections 2 and 3 of this chapter.

In section 4 the generality of differentiation is evaluated. Questions such as whether the concept applies only to the perception of persons or is also relevant to non-social objects are discussed in order to establish the implications of an interpretation of the LPC scores in terms of cognitive differentiation .

The remainder of the chapter consists of a description and evaluation of Fiedler's 'differentiation' interpretation of his predictor measures.

2. COGNITIVE COMPLEXITY AND COGNITIVE DIFFERENTIATION

The term 'cognitive complexity' is usually used to denote structural differences between individuals in their ability to process information about social stimuli. More generally, some people are suggested to have more complex cognitive structures than others.

Basically, a cognitive structure is a hypothetical link between stimulus information and an ensuing judgement which refers to those cognitive processes which mediate the input-output sequence. (Bieri et al., 1965, page 184)

Cognitive complexity is a multidimensional concept involving the

components 'differentiation', 'articulation', and 'integration' (Warr and Knapper, 1968). Different approaches place more or less emphasis on each of these components and use different operations to measure them (Streufert, 1970). Broadly speaking, it is possible to distinguish between one major approach which emphasises differentiation (e.g., Bieri, 1961; Crockett, 1965) and another which emphasises integration (e.g., Harvey, Hunt and Schroder, 1961).

Differentiation refers to the number of dimensions of information extracted from a given 'domain' of stimuli. When defined in this way, a cognitively complex person is one who has 'the capacity to construe social behaviour in a multidimensional way' (Bieri et al., 1965, page 185).

Integration refers to the relating or 'hooking' together of differentiated dimensions. It is an organisational variable which refers to 'the extent to which dimensional units of information can be inter-related in different ways' (Schroder et al., 1967, page 25).

In each of the two approaches distinguished above differentiation is seen as a necessary condition for integration. However, high levels of differentiation and integration do not always go together: small, non-significant correlations have been obtained between measures of differentiation and integration (Vannoy, 1965; Streufert, 1970).

People capable of construing stimulus objects in a multidimensional way may not be particularly aided by this ability if, having extracted the information, they are unable to integrate it. The fact that thought-disordered schizophrenics have been found to have highly differentiated construct systems seems to support this view (Bannister and Mair, 1968). This suggests that cognitive complexity and confusion are two different conditions (see Smith and Leach, 1972). Only when a person evidences high

levels of both differentiation and integration can they be regarded as cognitively complex.

Authors who have suggested that LPC scores reflect cognitive complexity have, in effect, only been referring to its differentiation component. Fiedler's latest interpretation of LPC scores also focussed on cognitive differentiation (Foa, Mitchell and Fiedler, 1971). It is important to note that there is no reason to believe that LPC scores might be related to integration. Given the form of the coworker scales, differentiation is the only aspect of complexity which might be assumed, on a priori grounds, to be related to LPC scores.

In view of the points just made, the remainder of this chapter is confined to a discussion of cognitive differentiation and the relationships between this variable and LPC scores.

3. THE MEASUREMENT OF COGNITIVE DIFFERENTIATION

The techniques which have been used to measure differentiation may be sorted into three broad categories.

a) The most commonly used procedure involves Kelly's repertory grid (Kelly, 1955), or some adaptation of it. In the original repertory grid method, subjects are requested to list a number of persons they know. The experimenter then selects three of these and requests the subject to think of some important way in which two are alike and yet different from the third. This process is continued in order to elicit the constructs which the subject uses in their judgment of other people. The same technique can be used to elicit judgments about physical objects and situations (Bannister, 1966).

Modifications of this technique may involve the subject in making paired comparisons, absolute judgments, object-sorting or some other task (Bieri, 1965). The task may also vary in whether or not the subject is allowed freedom of choice in the persons they describe, and in whether they use their own constructs or those provided by the experimenter.

Given any one of these methods for eliciting judgments, a variety of analytic techniques may be used to obtain a differentiation score for the subject. Bonarius (1965) noted more than ten different analytic procedures which included counting the number of underlying factors, totalling the number of constructs elicited, or using a row-matching procedure where each construct is compared with all others.

b) Projective techniques have also been used. For example, Bieri and Blacker (1955) derived two indices from a modified Rorschach procedure. Subjects were presented with a number of ink blots and asked to describe what the blot could be. Each blot was presented three times, each time the subject being required to state what else it could be. A variety of analytic procedures were used to obtain differentiation scores.

c) A number of other measures have been claimed to reflect degrees of differentiation. Some of these are directly related to LPC and ASO, e.g. the 'elevation difference' and 'profile dissimilarity' components of ASO (see e.g. Vannoy, 1965). The measure of 'Dogmatism' developed by Rokeach (1960) has also been interpreted in this way (see Evans and Dermer, 1971).

4. THE GENERALITY OF COGNITIVE DIFFERENTIATION

Questions of generality arise with respect to at least three issues which, though they are separable in principle, have usually been confounded in practice. These issues are concerned with the extent to which the same processes are involved in the perception of people and non-social

objects; the extent to which the same processes are involved throughout the domain of person perception; and the extent to which different measurement techniques measure the same concept. Each of these issues are discussed in turn.

4.1 Generality over Social and Non-Social Objects

The issue here is whether or not cognitive differentiation is a general trait which is similarly manifested in different domains of stimuli. Various a priori arguments have been advanced as to why this should or should not be the case (see e.g. Warr and Knapper, 1968). At present the evidence is, at best, equivocal (see Bieri and Blacker, 1956; Hess, 1966). In general, authors have concluded that the available evidence does not justify generalisations from the social to the non-social domain (see e.g. Bieri 1965, page 19).

However, conclusions regarding this matter are made difficult by the fact that in most studies two issues have been confounded: generality across domains, and generality across measures. For example, Bieri and Blacker (1956) used Kelly's repertory test to obtain subjects' perceptions of people, and a Rorschach procedure to assess the perceptions of non-social objects.

Two studies are exceptional in this respect (Signell, 1966; Mitchell, 1970a). In both studies, the same measures and analytical procedures were used to elicit perceptions of social and non-social objects. Unfortunately, in neither case were the results reported in such a way as to enable firm conclusions to be drawn regarding the relationships between the two areas of differentiation. The only relevant information showed different relationships between each of the measures of differentiation and a third variable such as LPC scores or age. These results are tentatively interpreted as

indicating that different cognitive structures underlie the perception of social and non-social objects.

In conclusion, it seems that there is little evidence to show that people differentiate to the same degree no matter what the stimulus object (social or non-social).

4.2 Generality within the Social Domain

Cognitive complexity has usually been investigated in the social domain of cognition. Few theorists have seriously considered the possibility that the complexity of an individual's cognitive structures may vary within this domain. And yet

we are justified in speaking of the complexity of an individual's cognitive system with respect to some domain of events, only on the assumption of generality of complexity within that domain. (Crockett 1965, page 61)

Crockett (1965) reviewed evidence from two unpublished studies (Supnick, Nidorf) which showed that the number of constructs subjects used to describe other people (one measure of differentiation) varied according to their evaluation of those people (e.g. like/dislike). Despite this, statistically significant correlations were obtained between the number of constructs used to describe different individuals. In other words, some generality was found in the degree of differentiation displayed.

Failure to consider the question of generality within the social domain appears to stem, at least in part, from the absence of a satisfactory definition of domain. A gross distinction has usually been employed between social and non-social, and questions of generality investigated within and across these 'domains'. However, some authors have made more distinctions and referred to 'domains' within the social 'domain'. For example, Evans and Dermer (1971) distinguished between task-related and interpersonal-related attributes of a person, and described differentiation between these

attributes as 'inter-domain' differentiation.

Authors such as Evans and Dermer have also made conceptual distinctions between 'intrapersonal' and 'interpersonal', 'stereotyped' and 'non-stereotyped' differentiation. The latter distinction refers to whether or not individuals tend to differentiate by making use of different dimensions (non-stereotyped), or by using all the dimensions similarly (stereotyped).

These distinctions may have empirical significance. Indeed, the results obtained by Evans and Dermer (1971) suggest this to be the case. In other words, it seems that individuals may vary in the degree to which they differentiate within the social domain (e.g. see Vannoy, 1965). Such findings indicate the need for a more limited and precise definition of 'domain'.

4.3 Generality across Measures

Given the variety of measures which are claimed to measure differentiation, the question arises to what extent are they measuring the same thing. Vannoy (1965) correlated scores on fourteen measures of complexity, a high proportion of which are usually regarded as measures of cognitive differentiation. All the measures were concerned with social stimuli. 'The factor analysis did not yield a large first factor on which all of the tests or even a large proportion were substantially loaded.' (Vannoy, 1965, page 394)

This study is not unique in its failure to find systematic relationships between measures claimed to reflect differentiation. Bieri commented that reviews of the research in this area demonstrate the 'lack of agreement' between measures (Bieri, 1966, page 26). Furthermore, even when the same measures are used but analysed in different ways the same

conclusions do not necessarily result (Bieri, 1965)..

There seem to be at least three possible explanations of these findings:

- a) None of the measures constitutes an adequate operationalization of the concept.
- b) The concept is not homogeneous therefore the measures will not necessarily correlate (see 4.2).
- c) Method variance obscures the 'true' variation in degrees of differentiation.

5. FIEDLER'S CONTINGENCY GRAPH AND COGNITIVE DIFFERENTIATION

Foa, Mitchell and Fiedler (1971) reconceptualised Fiedler's contingency graph using a 'differentiation-matching' hypothesis. The remainder of this chapter consists of a description of their propositions and the a priori arguments and empirical evidence cited in their support. The validity of these propositions is then critically evaluated.

Foa et al. stated three propositions:

- a) The high LPC leader differentiates 'more clearly among the various aspects of the task situation than does the low LPC leader'.
- b) The situational favourableness (SF) dimension of the contingency graph is a dimension of differentiation, situations of medium SF being most highly differentiated.
- c) Leadership effectiveness is contingent on the match between the leader's ability to differentiate (as reflected by the LPC score) and the degree of differentiation present in the task situation. More specifically: high LPC leaders, being high differentiators, are more effective in situations of medium SF. Low LPC leaders, being low differentiators,

are more effective in relatively undifferentiated situations (low and high SF).

5.1 Proposition (a): Supporting Arguments and Evidence

Proposition: The high LPC leader differentiates 'more clearly among the various aspects of the task situation than does the low LPC leader'.

Foa et al. claimed that the results of an analysis reported by Mitchell (1970a) supported this proposition in a 'non-specific' way, inasmuch as it showed high LPC persons to differentiate more between the characteristics of various groups than low LPC persons.

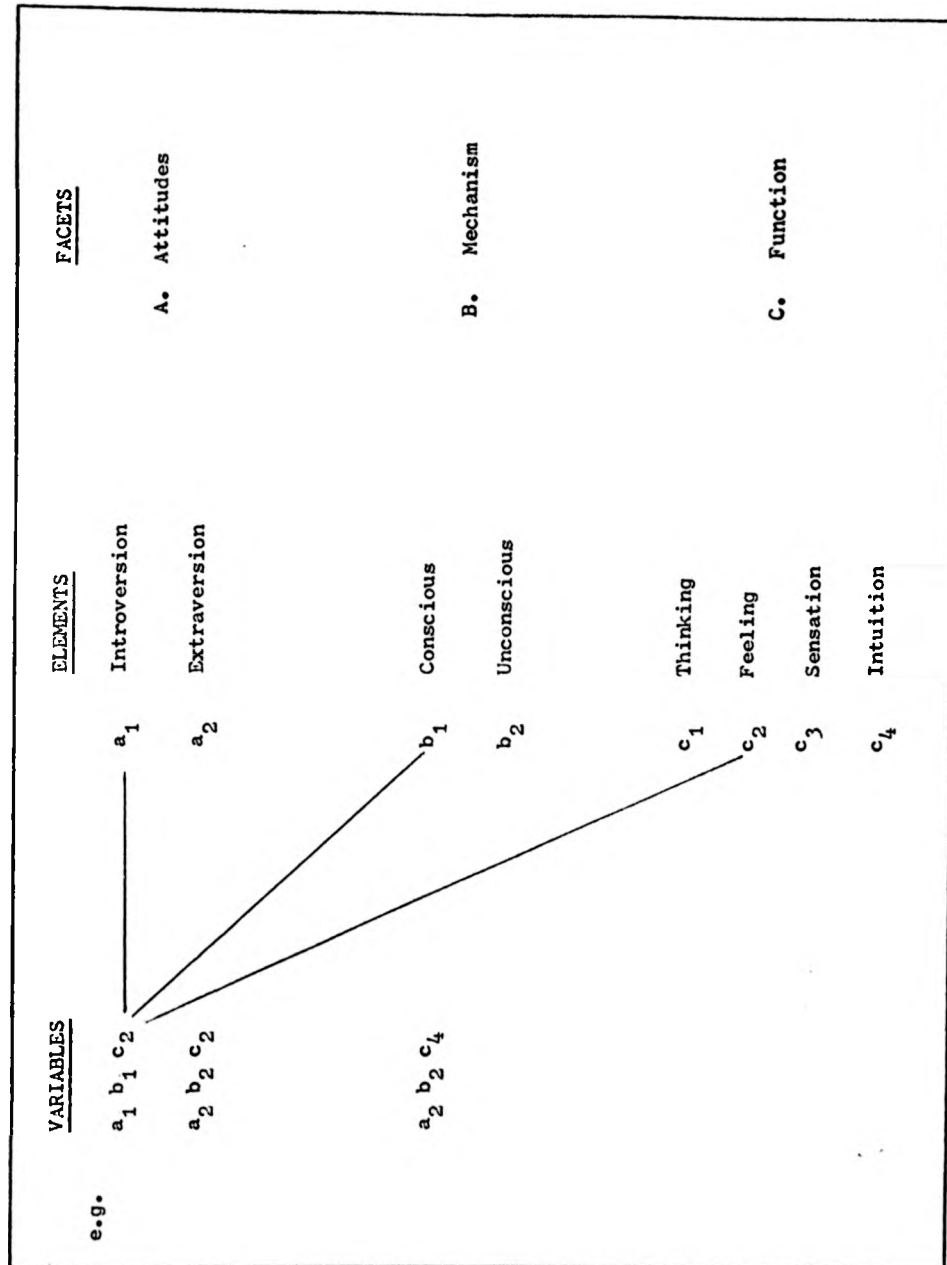
In support of their 'more specific interpretation' of LPC scores as indicators of differentiation between various aspects of task situations, Foa et al. cited the results of two investigations. These involved internal analysis of the LPC scale (Mitchell, 1970a), and observations of the relationship between LPC scores and an independent measure of differentiation (Mitchell and Foa, 1969). By interpreting these data in the context of facet analysis (Foa, 1965), Foa et al. claimed the results of these two investigations supported their first proposition.

In facet analysis, variables included in a research design are defined in terms of their component elements. The term facet denotes a component set of the variable, each set being composed of a number of elements (see Figure 21). In his discussion of facet analysis, Foa (1965) proposed a contiguity principle which states that the correlation between two variables with a facet element in common should be higher than the correlation between two variables that do not. In Figure 21 the correlation between the variables a_1, b_1, c_1 and a_1, b_1, c_2 should be higher than the correlation between variables a_1, b_1, c_1 and a_2, b_2, c_4 . Applying this facet analysis approach to cognitive differentiation, Foa et al. proposed

FIGURE 21

RELATIONS BETWEEN VARIABLES, ELEMENTS AND

FACETS IN FACET ANALYSIS



that:

an individual may differentiate among the elements of any given facet, . . . and . . . this differentiation is then reflected in the variables which differ in the elements of this particular facet. The degree of differentiation is thus specific to the elements of each facet rather than to the variables. (ibid., page 131 *[my italics]*)

In effect, this is a different way of defining a 'domain' (see page 120) and therefore results in different predictions regarding the generality of degree of differentiation.

Mitchell derived two scores from individuals' ratings on the LPC questionnaire: a total score on the task-related adjectives, and a total score on the interpersonal-related adjectives. These analyses were conducted on data obtained from high and low LPC groups, and within-group correlations computed between the two scores. Mitchell's reasoning was that the more a subject differentiates between the task-related and interpersonal qualities of another person ('inter-domain, intrapersonal differentiation'), the lower the correlation would be.

A correlation of minus .05 was obtained by the high LPC scorers, whilst in the low LPC sample a correlation of plus .2 was found. Foa et al. interpreted these results as showing that the high LPC persons were high inter-domain differentiators, and the low LPC persons differentiated less but showed evidence of 'some differentiation' (page 133).

In Mitchell's analysis, the domains which were differentiated from each other were task and interpersonal. By viewing this as differentiation between facet elements, Foa et al. reasoned that this type of differentiation, i.e. between the facet elements task and interpersonal, should be found not only in responses on the LPC questionnaire, but also in other variables where these facet elements occur. They cited the results of Mitchell and Foa's study in support of this hypothesis and in support of their first proposition.

Mitchell and Foa required thirty-two leaders to complete a 31-item rating scale after performing an experimental group task. The items in the scale were then grouped into five 'variables', each being defined by a combination of the elements of two facets. The two facets and their elements were as follows:

<u>Facet</u>	<u>Elements</u>
A. Actor	a_1 group a_2 leader
B. Object	b_1 task b_2 group b_3 member

The variables were: task performance of the group (a_1b_1); the leader's own task performance (a_2b_1); the leader's behaviour towards individual group members (a_2b_3); and the behaviour of the group towards the group (a_1b_2), i.e. group atmosphere. Correlations between each of these variables were computed in the case of high and low LPC leaders. With only one exception, the correlations obtained by the high LPC leaders were lower than those obtained by the low LPC leaders. These findings were taken to indicate that the high LPC leaders differentiated more 'between task and interpersonal behaviour as well as between (their) own behaviour and group behaviour' than did the low LPC leaders (Foa et al., page 134).

In sum, Foa, Mitchell and Fiedler claimed to have found support for their proposition that LPC scores reflect degrees of differentiation between the task and interpersonal features of task situations. Furthermore, they claimed that the evidence showed high LPC scorers to be higher differentiators (in a particular sense) than low LPC scorers.

5.2 Proposition (b): Supporting Arguments

Proposition: The SF dimension of the contingency is a dimension of degree of differentiation, medium SF situations being most highly differentiated.

Foa *et al.*'s argument in support of the above proposition focussed on the interaction between Fiedler's three situational variables. They suggested that at the extremes of the SF 'dimension' the interpersonal and task features are equally favourable (or unfavourable) for the leader. It follows that such situations are relatively undifferentiated. Situations of medium SF are rather different: some factor(s) may be 'favourable' for the leader (e.g. group atmosphere), whilst others are 'unfavourable' (e.g. task structure). Such situations are therefore relatively differentiated.

These considerations led Foa *et al.* to classify the eight cells of the model in the manner shown in Table 19. Octants 1, 2, 3, and 8

TABLE 19

FOA *et al.*'s CLASSIFICATION OF FIEDLER'S SITUATIONAL VARIABLES

Group Atmosphere	Good		Poor	
Task Structure	High	Low	High	Low
Position Power	High Low	High Low	High Low	High Low
	↓ ↓	↓ ↓	↓ ↓	↓ ↓
Interpersonal Facet	High		Low	
Task Facet	Hi Hi	Hi Lo	Hi Hi	Hi Lo
	1 2	3 4	5 6	7 8
	← Undiff. →		← Diff. →	
			→ Undiff. ←	

were deemed to be undifferentiated. Octant 3 was included in this category on the assumption that high PP compensates for low TS. If this is the case, octant 3 situations are characterised by favourable task and interpersonal facets. Octant 2 was also judged to be relatively undifferentiated on the grounds that when the task is structured, low PP does not reduce the favourableness of the situation. Therefore, as in the case of octant 3, both the task and interpersonal facets of the situation are favourable for the leader.

Similar arguments were implicit in Foa et al.'s decision to classify octants 6 and 7 as differentiated, along with octants 4 and 5.

5.3 Proposition (c): Supporting Arguments

Proposition: Leadership effectiveness is contingent on the match between the leader's ability to differentiate and the degree of differentiation present in the task situation.

Foa et al. argued that high LPC leaders will be more effective in situations of 'medium SF' on the grounds that such situations are differentiated, and therefore require a leader capable of differentiation. Low LPC leaders, being low differentiators, will be more effective in undifferentiated situations (low and high SF). In such situations, high LPC leaders, by differentiating where no differentiation is required, will:

tend to focus attention on a given aspect rather than on the total situation (and so) be less effective. (page 135)

In an attempt to claim support for this proposition, Foa et al. noted that other authors have made similar suggestions about the possible relationship between the information-processing abilities of an individual and the complexity of task situations. For example, Schroder et al. suggested:

If the task requires the processing of large amounts of

discrepant information, and if this information must be integrated into a flexible, comprehensive system, then we would expect integratively complex persons to perform better than integratively simple persons. Conversely, we may expect superior performance by simple persons (if) . . . success requires only simple and unchanging decisions. (Schroder et al., page 122)

Foa et al. continued to seek support for their third proposition by re-classifying the results cited by Fiedler (1967). They claimed that this provided an opportunity 'to test whether the contingency model can be reinterpreted in cognitive terms' (page 135). The situational dimension of the graph they re-labelled in the manner shown in Table 19. They then observed the direction of the correlations (see above) in each of the octants. On the grounds that negative correlations were observed in the octants assumed to be undifferentiated (1, 2, 3, and 8), and positive correlations in the 'differentiated' octants, Foa et al. claimed empirical support for their 'differentiation matching' hypothesis (see Foa et al., page 136).

Foa et al. also claimed that this proposition was supported by the results of two tests reported by Mitchell (1970a). Mitchell obtained subjects' perceptions of a number of hypothetical task situations, each of which was described in terms of three components: task structure, position-power and interpersonal relations (see Mitchell 1970a, pp. 170-72). His findings led him to conclude that his high LPC subjects had more complex cognitive structures because they used information from all three of the situational components rather than just one, as did the low LPC subjects. The results of these plus other analyses led Mitchell to conclude that 'low LPC subjects make more additive and less complex judgements' (page 171).

5.4 Evaluation of Proposition (a)

Proposition: The high LPC leader differentiates 'more clearly among the various aspects of the task situation than does the low LPC leader'.

At least seven studies have been conducted in which data relevant to this proposition were obtained. Tests of this proposition differ in whether or not LPC scores were subjected to internal analysis (e.g. intrapersonal, inter-domain differentiation) or correlated with scores on independent measures of differentiation. The results of these studies are discussed under these headings on the grounds that the results of internal analyses can be interpreted in a variety of ways and should therefore be attributed less weight than data obtained from independent measures.

a) Data obtained from independent measures

One such study was performed by Bass et al. (cited in Fiedler, 1967). They factor-analysed data from biographical, personality and attitudinal measures, and interpreted their results as follows: 'a low LPC individual . . . has a relatively complex cognitive structuring of his social environment' (Fiedler 1967, page 50). High LPC scores were found to be associated with high F-scale scores, low category width, and low 'independence of judgement'. These are generally taken to indicate low differentiation. However, 'The individual with intermediate LPC scores . . . seems to be cognitively more complex . . . than either the high or low LPC person' (Fiedler 1967, page 51).

Evans and Dermer (1971) obtained rather different results. They investigated relationships between a version of the LPC scale and measures of stereotyping interpersonal differentiation: e.g. 'dogmatism', 'intolerance of ambiguity', and 'tolerance of uncertainty'. They interpreted

their findings as showing that low LPC persons were 'characterized by cognitive simplicity'; and high LPC persons were 'either cognitively complex or only moderately so'.

Weissenburg and Gruenfeld (1966) investigated relationships between LPC scores and Witkin's embedded figures test (EFT). The EFT reflects differences between people in the extent to which they are 'field-dependent' or 'field-independent' (Witkin et al., 1962). Field-independent persons have been found to have a more analytical perception of their environment (i.e. more differentiated) than field-dependent persons (Weissenburg and Gruenfeld, page 392).

Weissenburg and Gruenfeld obtained the EFT scores of seventy-three male supervisors and stratified them at arbitrary cut-off points into 'high, moderate and low' categories. Mean LPC scores were computed within each category and an ANOVA performed on the data. The relationships were found to be statistically significant ($p < .05$). Inspection of the cell means revealed a U-shaped relationship: high LPC scorers were the most field-dependent; moderate LPC scorers were the most field-independent (differentiating); and the 'low' LPC scorers obtained moderate scores on the EFT. However, the 'low' LPC scorers had a mean LPC score of 62, therefore they would be more validly described as a moderate LPC sample (see Fiedler, 1967).

The results suggest that field-dependence/independence and LPC scores are systematically related, but not in a simple linear manner as required by Foa et al.

Mitchell (1970a) required sixty American university students to complete LPC scales and two measures of differentiation: a group-sorting measure and a nation-sorting measure. In the case of the group-sorting

task, correlations of +51 ($p < .025$, males) and +15 (ns, females) were obtained. Correlations of +28 (males) and +13 (females) were obtained between LPC scores and scores on the nation-sorting task.

At first sight, these results seem to provide little support for the differentiation interpretation of LPC scores: three of the four correlations were non-significant. However, Mitchell provided a number of reasons why this might be the case which were based on the possibility that degree of differentiation is not a general trait (see section 4.1), but a capacity which is dependent on the extent to which an individual is 'experienced' and 'interested' in a given domain.

His argument was that since the group-sorting measure deals with work settings it probably reflects the same cognitive structures as are reflected by LPC scores. On the other hand, the nation-sorting measure probably taps a different domain and therefore reflects cognitive structures different from those reflected by LPC scores. If this were the case, significant correlations would be expected between LPC scores and the group measure, but not the nation measure. This was what Mitchell predicted, and also what was found. Furthermore, since the males had more leadership experience than the females they would be expected to differentiate more within the associated cognitive domain. This would be reflected in significant relationships between LPC scores and scores on the group-sorting measure. Again, this was what was found.

In sum, Mitchell's data showed a significant association between the LPC scores and differentiation scores (on a group-sorting measure) of male students. He replicated this finding with an independent sample of male students ($r = .49$, $p < .025$). These findings suggest that LPC scores reflect a certain sort of differentiation, high LPC persons being higher differentiators than low LPC persons.

Larson and Rowland (1974) investigated relationships between LPC scores and two measures of differentiation: Mitchell's group-sorting task and Bieri's modified repertory test (MRT). They administered these measures to five independent samples with varying educational and managerial backgrounds. Subjects' LPC scores were correlated with scores on the two differentiation measures. Only one significant correlation was obtained, this being between the LPC scores of male graduate students and scores on Bieri's MRT ($r=35$, $p<01$). These results failed to replicate those obtained by Mitchell (1970a), and failed to support Foa et al.'s reinterpretation of LPC scores.

Larson and Rowland conducted two further analyses by stratifying the distribution of LPC scores into high, moderate and low LPC groups and then stratifying each group into high and low variance sub-samples. Within-cell correlations were computed between subjects' LPC scores and differentiation scores. Of the thirty correlation coefficients, five were significant. Inasmuch as these results fail to suggest that the LPC scale is multidimensional, they conflict with the findings of Bass et al. and Weissenburg and Gruenfeld.

In the study by Mitchell and Foa (1969) leaders rated various aspects of their own and their group's behaviour (see page¹²⁵). Foa et al. reported the results of an analysis which was not described in Mitchell and Foa's publication. This involved calculation of the correlations between the rating scales completed by high and low LPC leaders. Foa et al. noted that nine of the ten correlations obtained by the high LPC leaders were lower than the equivalent correlations obtained by low LPC leaders. They took this to indicate that the high LPC leaders differentiated more between these aspects of the task situation than did the low LPC leaders.

If Foa et al.'s interpretation of these data were valid it would indicate empirical support for proposition (a). However, only six of the ten correlations provided a direct test of their proposition since only those reflected differentiation between the task and interpersonal aspects of the situation. In the case of the high LPC leaders, three of these six correlations were statistically significant, two of these three being larger than .5 (.72 and .69). In other words, these data suggest that high LPC leaders are not always high differentiators, even where task and interpersonal factors are concerned.

Shima (1968) investigated the relationship between ASO scores and the predictive accuracy of male highschool students. The results of this study have a bearing on the validity of proposition (a) if one assumes, as does Fiedler, that LPC and ASO reflect the same qualities, and if it is also assumed that differentiation will normally be required in order to predict accurately the responses of others.

Shima gave his subjects Fiedler's coworker scales and asked them to describe three most preferred coworkers (MPCs) and three least preferred coworkers (LPCs). Individuals' ASO scores were derived from the first LPC and MPC scales completed. Two further scores were derived which reflected the variability of subjects' perceptions of their 'preferred' coworkers (DP score) and 'non-preferred' coworkers (DN score). The 'DP' score was computed by subtracting the lowest and highest total MPC scores obtained by a subject. The same analysis was performed on the LPC scales to obtain a 'DN' score.

A low DP score indicates that the subject has perceived his various most-preferred coworkers equally favourably. Similarly, a low DN score indicates that each least-preferred coworker has been perceived with 'equal' favourableness. Shima's interpretation of these scores was as

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follows: ' . . . we assume that both the DP and DN scores show the ability for discrimination in interpersonal cognition' (Shima, page 23).

In his first experiment, Shima correlated the ASO, DP and DN scores of 194 male highschool students. He found a small but significant correlation between the DP and DN scores ($r=+.26$, $p<.01$); however, these scores seemed unrelated to individuals' ASO scores: the correlation between ASO and DP was $+.025$, and between ASO and DN it was $+.02$.

Shima continued his investigations by examining relationships between the measures just described and subjects' scores on a test of predictive accuracy (Bieri, 1955). In the latter test, subjects were provided with descriptions of a number of social situations and asked to select which of a given list of alternative behaviours some associate(s) (four of the subject's classmates) might employ. Two were regarded as least preferred coworkers and two were most preferred coworkers. The questionnaire responses of those persons were obtained in order to assess the subjects' predictive accuracy.

Analysis of variance showed that persons who obtained both high DP and high DN scores were the most accurate in their predictions. The size of an individual's ASO score seemed to be of little importance inasmuch as no significant effects were observed for ASO.

In attempting to evaluate the validity of Foa et al.'s interpretation of Fiedler's contingency, two of Shima's findings are of particular significance. The first concerns the absence of any statistically significant relationship between ASO and either DN or DP scores. The significance of this finding depends upon the meaning of DP and DN. Shima claimed that these scores reflected 'ability for discrimination' and made a vague distinction between this and 'differentiative ability'. However, these measures could equally well be taken to reflect interpersonal differ-

entiation. Asking subjects to describe a variety of people and then examining the differences in their descriptions has been a popular method for assessing degree of differentiation (see section 3). When interpreted in this light, these findings lend little support to an interpretation of Fiedler's predictor measures as indicators of human information-processing in any general sense.

The results of Shima's analysis of variance also have a bearing on Foa et al.'s propositions. These findings suggest that ASO (and LPC) scores do not reflect individual differences in predictive accuracy. These findings are of significance inasmuch as Foa et al. implicitly assumed that a person who differentiates necessarily does so accurately. Without this assumption there would be no means to explain how a high differentiator is more effective than a relatively low differentiator in differentiated situations.

In conclusion, these findings lend little support to Foa et al.'s reconceptualization of Fiedler's contingency. However, it is important to note that Foa et al.'s 'more specific' interpretation of LPC (and ASO) scores in terms of differentiation between task and interpersonal facets was untested.

b) Data obtained from internal analyses of the LPC scale

Internal analyses of the LPC scale have been conducted by Mitchell (1970a) and Evans (1973). Both researchers obtained subjects' scores on the task and interpersonal item sets of the LPC and intercorrelated them. Mitchell reported correlations of -.05 and +.20 between the task and interpersonal scores of high and low LPC subjects respectively. Both Mitchell and Foa et al. interpreted these correlations as a demonstration of greater differentiation by high LPC subjects (see page 124). However,

the validity of this interpretation seems questionable since neither of the correlations were significantly different from zero or from each other.

Whether or not Mitchell's findings can be claimed to support Foa et al.'s proposition is also called into question by the results obtained by Evans (1973). Using a different LPC scale, but performing the same analysis as above, Evans obtained correlations of +41 and +46 ($p < .05$). Since these correlations show no significant differences between high and low LPC persons they fail to support Foa et al.'s proposition that high LPC persons differentiate more between the task and interpersonal facets of objects than low LPC persons.

c) Evaluation of proposition (a): conclusions

Foa et al.'s first proposition was that high LPC leaders differentiate more between the task and interpersonal aspects of task situations than do low LPC leaders (see page 122). They cited two sorts of evidence in support of this claim. They judged a direct test of their proposition to be provided by data obtained from measures which included task and interpersonal facets (e.g. Evans, 1973; Mitchell and Foa, 1969). In addition they claimed that data regarding relationships between LPC scores and other (more general) measures of complexity provided 'indirect support' (e.g. Mitchell, 1970a).

Studies in which data of this sort were obtained have been critically reviewed in this chapter. The results suggest three major conclusions. The first is that LPC scores do appear to correlate with various measures of differentiation (Bass et al., Evans and Dermer, Weissenburg and Gruenfeld, Mitchell, Mitchell and Foa). Only one study failed to find significant relationships (Larson and Rowland).

Second, whether or not LPC scores reflect differentiation between the task and interpersonal aspects of task situations remains an open question. The available evidence is unconvincing and open to a variety of interpretations.

Third, high LPC persons are not necessarily higher differentiators (of whatever sort) than low LPC persons.

These conclusions are discussed in greater detail in the final section of this chapter (pages 138 - 143)

5.5 Evaluation of Proposition (b)

Proposition: The situational favourableness (SF) dimension of the contingency graph is a dimension of degree of differentiation, situations of medium SF being most highly differentiated.

This proposition is subject to the same criticisms as were levelled against Fiedler's assumed dimension of SF (see pages 111). The criticisms concern the definition and ordering of the variables GA, TS, and PP (see page 12), and the induction of an assumed dimension of situational favourableness. Foa et al. merely presented a new description of this assumed dimension in terms of situational differentiation.

There are additional problems with proposition (b). These concern Foa et al.'s post-hoc definitions of particular octants as either differentiated or undifferentiated. They labelled octants 1, 2, 3, and 8 as being 'undifferentiated'. This seems reasonable in the case of 1 and 8, since in these octants the three situational variables are either all 'favourable' or all 'unfavourable'. However, Foa et al. argued that this was also true of octants 2 and 3 on the grounds of an assumed interaction between TS and PP. The validity of this assumption has yet to be tested.

In conclusion, it seems that this proposition is subject to a number of criticisms and lacks empirical support.

5.6 Evaluation of Proposition (c)

Proposition: Leadership effectiveness is contingent on the match between the leader's ability to differentiate and the degree of differentiation present in the task situation.

The validity of this proposition depends, in part, on the validity of the other two. In addition, the 'differentiation matching' component must be validated.

Foa et al. claimed to have conducted a 'test' of this proposition in which they 'reanalyzed' the results of the studies reported by Fiedler (1967). However, this supposed reanalysis was nothing more than a restatement of the contingency graph, using new terms to describe the horizontal axis (see Foa et al., page 136). As such, it cannot be claimed to test this proposition.

The results obtained by Mitchell (1970a) and Mitchell and Foa (1969) lend some 'low-level' support to proposition (c). This is because they imply that high LPC subjects have more chance of making an accurate diagnosis of a situation since they use more information than low LPC subjects in reaching their judgment (see pages 127 and 128 of this chapter). However, whether or not leadership effectiveness is contingent on the 'match' between the leader's ability (in this respect) and the situation is yet to be tested.

In conclusion, the validity of this hypothesis seems doubtful on the grounds that propositions (a) and (b) are open to question. In addition, no adequate test of this proposition has yet been conducted.

5.7 Fiedler's Contingency Graph and Cognitive Differentiation: Conclusions

The purpose of this chapter was to assess the validity of a cognitive interpretation of LPC scores. This has been done by evaluating the

available empirical evidence. However, the interpretation should also be assessed in terms of whether or not it is supported by a 'reasonable' rationale. The reasons for predicting that LPC (and ASO) scores reflect some information-processing variable (such as differentiation) lie in the manner in which the LPC score is obtained (see page 114) and in the relationships which have been observed to exist between LPC scores and effectiveness.

It has been shown that high and low LPC leaders differ in their effectiveness in certain situations (see Chapter 2). They also appear to behave differently from one another (see Chapter 3). Such observations raise the question as to why they differ. There are at least two sorts of reason why this might be the case.

First, high and low LPC leaders may differ from each other in the motives they seek to satisfy. However, identifying the link between motives and behaviour involves high levels of inference (see Chapter 4). For example, two persons may share the same motive to achieve some particular goal but behave differently from one another due to the different assumptions they make about the results of those behaviours. Conversely, two people may behave similarly but be seeking to satisfy different motives. This could be because they made different assumptions about what those behaviours would achieve.

These considerations regarding the difficulties associated with motivational arguments suggest another possible reason why high and low LPC leaders behave differently. This is that they differ in their information-processing behaviours. This suggests, for example, that they may differ in their diagnosis of a given situation and make different assumptions about the most 'appropriate' set of behaviours.

It is important to appreciate that an information-processing interpretation of LPC scores, whilst it focusses on diagnostic differences between leaders, is implicit in any motivational interpretation. This is because having entered a situation with a given set of motives, a leader must (consciously or otherwise) diagnose the situation in order to decide how to act. It therefore seems that there are good a priori reasons for supposing that Fiedler's predictor measures reflect some information-processing variable.

The validity of an information-processing interpretation must also be assessed by the usual empirical criteria. The results of the studies reviewed in this chapter have been categorised in Table 20. When taken together they allow some conclusions to be drawn regarding the meaning of LPC scores and the validity of Foa et al.'s propositions.

First, the majority of studies obtained evidence which supports an interpretation of LPC scores in terms of some sort of differentiation. These findings reinforce the a priori arguments presented earlier and provide indirect support for Foa et al.'s first proposition (see page 122).

Second, high LPC scorers are not necessarily higher differentiators than low LPC scorers (see Table 20). For example, Bass et al. found low LPC scorers to be more differentiating than high LPC scorers, whereas Evans and Dermer observed the opposite. There are a number of reasons why this might be the case. For example, each of the investigators employed sample-bound definitions of high, moderate and low LPC. These definitions may have varied from sample to sample and they may have been critical. In addition, the domain in which the subjects' differentiation was assessed may influence the direction of the relationship between LPC scores and differentiation. This seems likely for theoretical reasons (see Crockett 1965, page 54).

TABLE 20

SUMMARY OF INVESTIGATIONS INTO THE DIFFERENTIATION INTERPRETATION
OF LPC SCORES

	Research Technique			
	Internal Analyses		Independent Measures	
	Supportive	Non-Supportive	Supportive	Non-Supportive
Evidence relevant to differentiation interpretation of LPC scores		Evans, 1973 Mitchell, 1970a	Bass <u>et al.</u> , 1964 Evans and Dermer, 1971 Weissenburg and Gruenfeld, 1966 Mitchell and Foa, 1969 Mitchell, ¹ 1970a Mitchell, ² 1970a	Larson and Rowland, 1974 Mitchell, ³ 1970a
High LPC scorers are higher differentiators than low LPC scorers		Mitchell, 1970a Evans, 1973	Mitchell, ¹ 1970a Mitchell, ² 1970a Evans and Dermer, 1971 Mitchell and Foa, 1969	Mitchell, ³ 1970a Bass <u>et al.</u> , 1964 Weissenburg and Gruenfeld, 1966 Larson and Rowland, 1974

1. Mitchell's group-sorting measure (see page 107)
2. Mitchell's measures of perceptions of hypothetical task situations (see page 123)
3. Mitchell's nation-sorting measure (see page 131)

Third, it is as yet impossible to determine the validity of Foa et al.'s first proposition that LPC scores reflect differentiation between the task and interpersonal facets of task situations. Foa et al. claimed that internal analyses of the LPC scale provided evidence relevant to this proposition. However, this evidence has been rejected on the grounds that it is of relevance to this proposition only when interpreted in the context of facet analysis. Until the validity of the facet analysis approach is established, this line of reasoning seems premature. Having rejected this source of data, the results of only two studies remain (Mitchell 1970a, pages 170-72; Mitchell and Foa, 1969). However, the results are mixed and allow no firm conclusions to be drawn.

Of the many individual-difference dimensions identified, cognitive differentiation appears to be unique in its relation with LPC scores. For this reason, and for the reasons given on page 140, it seems likely that differences of this sort between high and low LPC scorers may help to explain differences between them in their effectiveness. However, there is little evidence to suggest that an individual consistently differentiates to the same degree, regardless of the stimulus. Therefore it seems necessary to further investigate the particular type of differentiation which distinguishes high and low LPC leaders. Whilst Foa et al. have suggested what the type of differentiation might be, the evidence reviewed in this chapter provides little support for their interpretation.

The arguments and evidence presented in this chapter suggest that Foa et al.'s post-hoc interpretation of the contingency graph is a rather ambitious piece of theorising. As yet there is no support for their claim that differences between high and low LPC leaders in their effectiveness are explicable in terms of 'differentiation matching'.

Furthermore, their claim that the situational 'dimension' of Fiedler's contingency graph represents a dimension of situational differentiation is unacceptable for methodological reasons.

One further conclusion may be drawn from the evidence reviewed in this chapter. This is that the LPC scale appears to be multi-dimensional. Different relationships are observed between LPC scores and measures of differentiation depending on whether the LPC scores are high, moderate or low (Bass et al., Evans and Dermer, Weissenburg and Gruenfeld). Future research into the relationship between size of LPC score and degree of differentiation will need to take this into account.

PART III

EMPIRICAL INVESTIGATIONS INTO THE MEANING OF LPC SCORES

INTRODUCTION

In Chapter 2 of this thesis it was concluded that LPC scores show sizeable correlations with group effectiveness. A valid explanation of this relationship has been hard to find, and yet:

. . . if contingency models are to fulfil their promise theoretically, and if they are to provide a guide for practice . . . the measurements must have construct validity. (See page

Attempts to establish the meaning of LPC scores were reviewed in Chapters 4 and 5. The accumulated weight of evidence suggests that of the many individual-difference variables, the only one which appears to be related to LPC is an information-processing variable called 'cognitive differentiation'. However, the arguments and evidence presented in Chapter 5 suggest that this is not a unitary concept: individuals do not necessarily differentiate to the same degree in all areas of perception. Furthermore, it is not at all clear what 'sort' of differentiation is related to LPC scores; nor is it clear how LPC relates to different degrees of differentiation. Whilst it has been suggested that high LPC leaders are higher differentiators than low LPC leaders, this has not always been found to be the case (see page 141)

A number of questions are suggested by these findings:

- a) What type of differentiation is reflected by LPC scores?
- b) How do high and low LPC leaders differ in their differentiation abilities?
- c) How do these differences explain their differential effectiveness?

To these was added a fourth question:

d) What type of differentiation is reflected by ASO (D) scores?

Question (d) was included for the following reasons. LPC and ASO have been found to correlate highly and have been assumed to be measuring the same 'thing' (see page 9). However, when viewed as measures of differentiation there are reasons to suppose that LPC and ASO reflect different constructs. LPC scores reflect a person's perception of one other person, and the extent to which he differentiates between the various attributes of the person being judged. This is known as intra-personal differentiation (see page 121). However, ASO is computed using both LPC and MPC scores and therefore may also reflect differentiation between people, i.e. interpersonal differentiation. Therefore it may be that ASO and LPC scores are not as interchangeable as Fiedler has suggested.

These research questions guided the empirical investigations reported in Part III of this thesis. They were modified and refined in the light of the results of a pilot investigation reported in Chapter 6.

CHAPTER 6

INVESTIGATION OF EMPIRICAL RELATIONSHIPS BETWEEN LPC, ASO
AND COGNITIVE DIFFERENTIATION: PILOT STUDY

1. HYPOTHESES TO BE TESTED

In order to investigate the relationships between LPC, ASO and differentiation, certain conjectures were made regarding the relationships between them. These are shown in Figure 22, and stated below in the form of hypotheses.

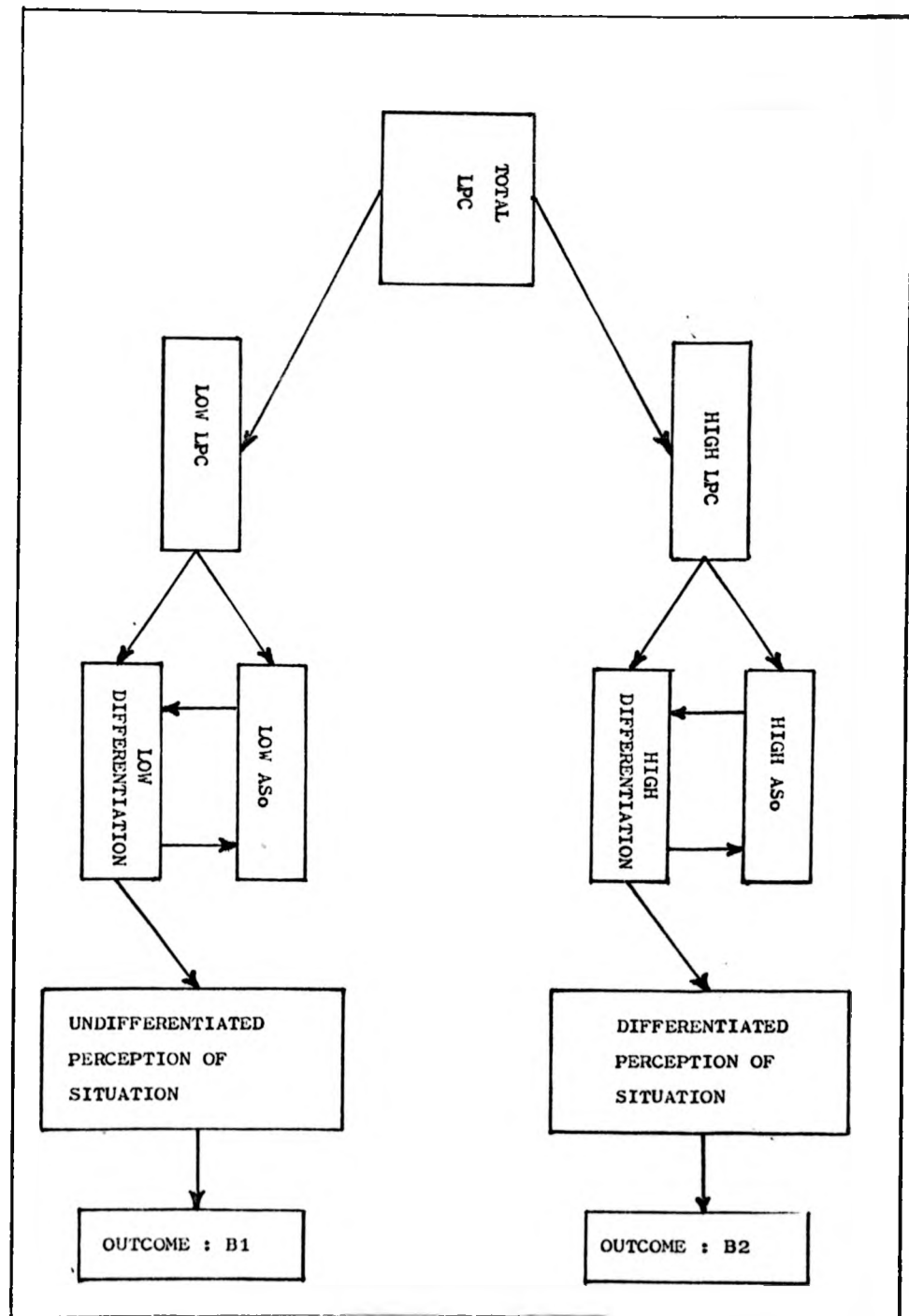
- I. High LPC/high differentiation. High LPC persons will score lower on measures of intrapersonal and interpersonal differentiation (i.e. are high differentiators) than will low LPC persons.
- II. High LPC/high ASO. High LPC persons will obtain lower D scores than low LPC persons (low D scores = high ASO).
- III. High ASO/high differentiation. Low D scorers will score lower on measures of intrapersonal and interpersonal differentiation than will high D scorers.
- IV. High LPC/high task-interpersonal differentiation. High LPC scorers will obtain lower correlations between task-related and interpersonal-related item-sets of the LPC scale than will low LPC scorers.

2. CHOICE OF MEASURES

In order to investigate relationships between LPC, ASO and independent measures of differentiation, the measures of differentiation had to meet a number of theoretical and administrative requirements. First, in view of the likely lack of generality of degree of differentiation across domains of cognition, it was necessary to select measures obtainable in the same domain as LPC and MPC. However, in the absence of a satisfactory

FIGURE 22

PARADIGM OF ASSUMED RELATIONSHIPS BETWEEN VARIABLES



definition of domain, the choice was not obvious. It was therefore made on a priori grounds: since LPC and MPC scales measure perceptions of people rather than objects, so should the measures of differentiation. Whilst further distinctions have been made within the social domain by some authors (see Chapter 5, page¹²¹), such distinctions were seen as being more controversial and were not employed in the selection of the independent measures.

Second, it was necessary to find a measure which could be administered to groups rather than individuals. This was because it was anticipated that any organisation would place a time constraint on the researcher for data collection.

Given these considerations, Bieri's Modified Repertory Test (Bieri, 1965) was chosen as the independent measure of differentiation for hypothesis testing. The results of a literature search suggested that this measure best met the stated requirements and was of adequate reliability and validity.

The Bieri measure, . . . , appears to be a fairly good measure (of differentiation), i.e., one which represents to a certain degree most of the aspects of cognitive complexity. (Vannoy 1964, page 54)

The choice of an LPC (and MPC) scale was also problematic since Fiedler has used at least three different scales. These have differed in the total number of items and in item content: both the adjectives used and the number of task-related and interpersonal-related items have varied from scale to scale. These differences have been found to have significance by Evans and Dermer (1971) who reported finding different relationships between LPC and differentiation depending on the LPC scale involved.

In order that generalisations might be made regarding the nature of LPC it seemed essential that the internal characteristics of the scale employed be known. Such knowledge could be obtained after data collection. However, it was considered desirable to obtain this information prior to administration for the following reasons. Fiedler's argument with respect to internal analysis of LPC and differentiation rests on there being two different types of adjectives: task-related and interpersonal-related (see page 114). For the purpose of the research reported here, it seemed preferable to select items as being either task- or interpersonal-related rather than assume that respondents perceived and used the items in such a way. Prior selection of items as being either task- or interpersonal-related would also ensure a sufficient number of items in each domain for independent analysis. This would avoid the problem encountered by Foa et al. (1971) who had to rely on only two items for the scoring of the task-related item set.

In order to meet these criteria it was necessary to construct an LPC scale. This was done by selecting items from previous LPC scales on the basis of factor-loadings reported by Evans and Dermer (1971) and Yukl (1970).

3. RESEARCH MEASURES

An LPC, MPC and Bieri's Modified Rep Test (MRT) were administered to each member of the research sample. From the LPC and MPC was derived a measure of the respondents' 'assumed similarity of opposites' or ASO (see page 8). From the MRT were derived two scores reflecting the extent to which the respondent differentiates between people (interpersonal differentiation) and within people (intrapersonal differentiation).

3.1 Modified Rep Test

The MRT is a ten by ten matrix consisting of ten rows of bipolar constructs provided for the respondent to describe ten persons. In the MRT designed for this investigation, the persons to be rated were those used by Bieri. They were selected to be representative of the range of persons in an individual's interpersonal experience. Bieri's constructs were not used since they were not considered meaningful to a British sample. Instead, constructs were selected on a rational basis to reflect the kinds of dimensions presumed to be meaningful to respondents, and on the basis of their loadings on evaluative, potency, and activity factors as reported by a number of authors (Burke and Bennis, 1961; Feshbach and Biegal, 1968; Osgood, Succi and Tannenbaum, 1957).

Certain modifications were made in the construction of the MRT. In its original form the more desirable pole of the construct always appeared on the same side, and each construct was scaled from +3 to -3. In the MRT designed for this investigation, the side on which the desirable pole of the construct appeared was counterbalanced and each construct was scaled from 1 to 6. This was seen to increase the likelihood of non-stereotyped differentiation being reflected by this measure.

Bieri's MRT, being a ten by ten matrix, required lengthy and complex instructions. It was therefore decided to modify the construction in order to reduce the possibility that respondents might find it difficult to complete. The matrix was therefore divided into ten parts, each part being a new construct with which to rate each of the ten individuals. Within each part the construct was repeated ten times so that the respondent could consider each of the ten individuals against the scales (see Figure 23).

FIGURE 23

EXTRACT FROM THE MODIFIED REPERTORY TEST

This is not a test. There are no right or wrong answers.
We would like you to describe the way you see a number of people.
These people are listed on the separate piece of PINK paper.
Examine this list and write in the initials of the person you are going
to describe.

Place the Pink paper list against each of the scales, starting below
with Leader - Follower.

There are ten scales set out on the following pages. Please do not
miss any.

When you have placed the Pink paper against the scale, think of how each
person appears to you, using the WORDS on the scale, then give each
person a score which best represents your view of that person. For
example, on the first scale below we ask you to describe people as
LEADER or FOLLOWER.

If you see a person as being a LEADER your score will be 4 - 5 - 6,
depending on the strength of your feeling. On the other hand, if you
see the person as a FOLLOWER your score will be at the opposite end of
the scale 3 - 2 - 1.

DRAW A CIRCLE ROUND THE NUMBER WHICH BEST DESCRIBES YOUR FEELING.

Continue until you have described each of the ten people on the ten
scales.

DO NOT START UNTIL YOU ARE CERTAIN WHAT YOU HAVE TO DO. PLEASE ASK WE
WILL BE PLEASED TO HELP.

If you are quite clear please begin with this first scale:-

Yourself	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Person you dislike	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Mother	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Person you would like to help.	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Father	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Friend of the opposite sex ...	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Friend of the same sex	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Person difficult to understand	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Your boss	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower
Person with whom you feel most uncomfortable	Leader	: 6 : 5 : 4 : 3 : 2 : 1 :	Follower

For the purpose of scoring, the matrix was reassembled with the persons being rated as the columns and the constructs as rows. To obtain an intrapersonal differentiation score an analytical row-matching technique was employed (Bieri, 1965), whereby each of the ten ratings in a row was matched with the ratings below it (i.e., for the same person). Each identical rating received a score of one, this procedure being continued for all possible row comparisons and the scores summed to provide a total score (see Figure 24).

FIGURE 24
EXAMPLE OF THE METHOD OF SCORING THE MODIFIED REP TEST

	<u>Persons</u>										<u>Score</u>	
	4	6	2	2	5	5	4	2	5	6	8	
	5	2	5	5	5	4	4	5	4	2	14	
	4	2	5	5	3	2	4	5	2	2	10	
	3	6	2	2	5	3	3	2	4	5	7	
	4	2	4	3	5	5	4	3	5	2	8	
Constructs	5	2	5	3	5	5	5	3	4	2	12	101
	4	2	5	3	4	4	4	3	4	2	12	
	4	2	5	5	4	5	4	3	4	2	10	
	5	2	5	4	5	4	5	4	5	3	13	
	3	2	5	4	5	5	5	2	6	1	7	
Score	14	29	22	8	22	13	18	10	13	15		

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Whilst the row-matching technique is the only mode of analysis employed by Bieri, it was recognised that the same matching procedure could be used to provide a measure of interpersonal differentiation. This was done by matching within columns instead of rows.

In the case of both intrapersonal and interpersonal differentiation the maximum possible score was 450. Such a score would indicate that the respondent had rated each person in an undifferentiated manner.

3.2 Co-Worker Scales

LPC and MPC scales were constructed, each consisting of sixteen adjective pairs: eight task-related and eight interpersonal-related. The adjective pairs were selected on the basis of their reported factor loadings (see page 148).

Each of the adjective pairs were scaled from one to eight, eight being attributed to the most favourable adjective. The position of the most favourable pole was randomised, as was the order of the task-related and interpersonal-related items (see Appendix C). The method of scoring and the implications of the scores have been described elsewhere (see Chapter 1, page 8).

4. SUBJECTS

The subjects of this investigation were twenty male craft instructors from the engineering industry. All had supervisory experience and was therefore defined as 'experienced leaders'.

5. PROCEDURE

At the time of data collection, the members of the research sample were attending a residential instructor training course. The researcher was introduced as a former employee of the organisation by whom they were being trained, now engaged in research at a university. The researcher described the aim of her research in terms of seeking to understand the influence of instructors' styles of behaviour on groups of trainees. This was put in the context of interpersonal as opposed to technical skills. It was suggested that the research might benefit

industry, by producing information which would show how people responsible for directing the activities of others could increase their interpersonal skills and ultimately organisational effectiveness. At this point, it was stated that the forms they were going to be asked to complete were not tests, that there were no right or wrong answers, and that the researcher's interest was in their views only. It was pointed out that there was no need for them to write their names on the forms and that therefore no individual could be identified. Their responses would be scored and presented in number form and would be completely confidential.

The researcher then suggested that in return for their co-operation, a discussion session could later be held in which they could be informed of their leadership inclinations and the ways in which these inclinations were likely to affect the behaviour of others. The respondents were then requested to complete an LPC scale (Fiedler, 1967) and told that the researcher would score the scales whilst they were completing the research instruments. Each individual's results would then be returned to him, and to no one else, and the implications of the scores discussed. This procedure was adopted in the hope of ensuring the full co-operation of respondents and had the additional advantage of allowing the researcher to check each respondent's understanding of how to fill in a set of semantic differentials.

Once the LPCs had been completed, the respondents were invited to inspect the forms in front of them (Appendix C, page 288 to 293). To control for fatigue and possible practice effects, the order of the LPC, MPC, and MRT forms in each booklet had been counterbalanced. It was pointed out that each person had the same forms but in a different order. The respondents were requested to turn to the white section of

the booklet (the MRT), and were told that the researcher would explain how to complete it since it was rather different from the form they had previously filled in. The researcher then worked through the written instructions for the MRT, writing examples on the chalk board. The respondents were asked to read the instructions, and if there were still any doubts as to how to complete the forms, to ask the researcher. Having checked their understanding, the researcher requested them to turn to the beginning of their booklets and to proceed. They were told that it was likely to take them no more than thirty minutes.

Once a respondent had completed the forms, the researcher collected them and checked that no sections had been missed. When all respondents had completed the research instruments and had their original LPCs returned, they were shown how, in their jobs as instructors, they could affect the behaviour of their trainees by their style of leadership. This was done by reference to the Managerial Grid (Blake and Mouton, 1964), demonstrating the implications of 'relationships-oriented' and 'task-oriented' styles of leadership.

6. RESULTS

6.1 Raw Scores, Means and Standard Deviations

The research instruments were correctly completed by the respondents, with the exception of one MPC scale which was omitted.

The raw scores on the co-worker measures: LPC, MPC, and ASO; and on the MRT: intrapersonal and interpersonal differentiation are presented in Appendix D)

Group means and standard deviations on the measures of intrapersonal and interpersonal differentiation are contained in Table 21

TABLE 21

INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION:
MEANS AND STANDARD DEVIATIONS

	<u>Differentiation</u>	
	Intra	Inter
\bar{x}	123	108
SD	25	29

N = 20

Examination of Table 21 shows the group mean interpersonal differentiation score to be lower than the group mean intrapersonal differentiation score. This finding demonstrates that as a group the respondents tended to differentiate more between persons than within persons. (The lower the score, the greater the amount of differentiation.)

Group means and standard deviations on the co-worker measures are contained in Table 22

TABLE 22

CO-WORKER SCALES: MEANS AND STANDARD DEVIATIONS

	<u>Co-Worker Scales</u>		
	LPC	MPC	ASO
x	60	97	13.3
SD	14.2	11	3.7
	N=20	N=19	N=19

6.2 Hypothesis I (see page 146)

To provide support for this hypothesis, negative correlations between LPC, intrapersonal and interpersonal differentiation were necessary. Such findings would support the interpretation of LPC as a measure of cognitive differentiation, high LPC persons being high differentiators.

To test this hypothesis, product-moment correlations were calculated between LPC, intrapersonal and interpersonal differentiation scores (Table 23). Contrary to the hypothesis, the relationships

TABLE 23

CORRELATIONS: THE CO-WORKER SCALES, INTRAPERSONAL
AND INTERPERSONAL DIFFERENTIATION

	LPC	ASO	Intra	Inter	
MPC	- .45 ^{xx}	+ .67 ^{xxx}	+ .24	- .19	
LPC		- .85 ^{xxx}	+ .21	+ .42 ^{xx}	xx: p .05
ASO			- .24	- .45 ^{xx}	xxx: p .005
Intra				+ .38 ^{xx}	

N = 20*

*Correlations involving MPC or ASO are based on an N of 19.

were found to be positive, indicating that the low LPC persons obtained lower differentiation scores than the high LPC persons, i.e. were higher differentiators.

The correlation between LPC and intrapersonal differentiation was non-significant, whilst the correlation between LPC and interpersonal differentiation was significant at the .05 level (r : + .42).

In view of the suggestion by Evans and Dermer that the relationship between LPC and differentiation differs for high and low LPC persons, the LPC scores were dichotomized at the median (62) into a low LPC and high LPC group. The range of scores for each group was 26 to 62 and 63 to 86 respectively. Within group correlations were computed between LPC, intrapersonal and interpersonal differentiation and the results presented in Table 24. The correlations were non-significant and the hypothesized relationship between LPC and cognitive differentiation not supported.

TABLE 24

CORRELATIONS: HIGH AND LOW LPC SCORES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION

	<u>Differentiation</u>		
	Inter	Intra	
Low LPC	+ .15	- .28	N = 10
High LPC	+ .39	- .13	N = 10

6.3 Hypothesis II (see page 145)

A low 'D' score reflects a high assumed similarity of opposites (ASO). The correlation obtained between D and LPC was $-.85, p < .005$ (Table 23), indicating that high LPC persons obtained low 'D' scores, i.e. perceived their most and least preferred co-workers as being similar.

In American samples, Fiedler found D and LPC to be correlated between $-.8$ and $-.9$ and therefore interpreted ASO and LPC scores interchangeably (Fiedler, 1967, page 44). Fiedler's findings are supported by these data obtained from a British sample.

6.4 Hypothesis III (see page 146)

To provide support for the above hypothesis, positive correlations between D scores, intrapersonal and interpersonal differentiation were necessary. Negative correlations were obtained, the correlation of $-.45$ obtained between D and interpersonal differentiation being significant at the .05 level. The correlation between D and intrapersonal differentiation was non-significant (Table 23). Therefore hypothesis III was not supported.

Following the suggestion by Evans and Dermer (see page 155), the

D scores were dichotomized at the median into high and low groups. The range of scores for each group was 6.7 to 12.2 and 13.3 to 22.4. Within-group correlations were computed between D, intrapersonal and interpersonal differentiation and the results presented in Table 25. Three of the four correlations were negative and all were non-significant.

TABLE 25
CORRELATIONS: HIGH AND LOW ASO SCORES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION

	<u>Differentiation</u>		
	Inter	Intra	
Low ASO	+ .2	- .4	N = 9
High ASO	- .1	- .2	N = 10

6.5 Hypothesis IV (see page 115)

Foa et al. (ibid., page 122) showed the LPC scale to contain three different item sets: task-related, interpersonal, and mixed. The correlation between **the first two** they found to be higher for low LPC persons: +.20, than for high LPC persons: -.05. They presented this evidence in support of their general argument that high LPC persons are high differentiators (see Chapter 5, page 123)

It was decided to repeat this analysis so that findings obtained by internal analysis of LPC could be compared with findings obtained by examining LPC with respect to an independent measure of differentiation.

The items in the constructed LPC were selected as being either task or interpersonal, according to the way in which they had been used by previous research samples. Since it could not be assumed that the items

had been used as selected, it was necessary to factor analyse the LPC scale. Inter-item correlations were therefore computed and Hotelling's Principal Components analysis performed on the data. Five components were extracted, the first two accounting for 52 per cent of the variance and the first three accounting for 65 per cent. Table 69 (Appendix D) represents the loadings of each item on each of the three components, six items loading on the first component, six on the second and four on the third. In the first component, five of the six items had been selected as being interpersonal; in the second component, five of the six items had been selected as task; and in the third component, two items had been selected as task and two-interpersonal. The components were therefore labelled 'interpersonal-related', 'task-related' and 'mixed' respectively, 'mixed' items being those which were not reliably assigned to one or other definable domain.

On the basis of the item loadings, a task score and an interpersonal score were derived from each LPC scale by summing the ratings of the task-related items and the interpersonal-related items. The scores, computed separately for the low and high LPC groups, are presented in Table 70 (Appendix D) and the correlations between them in Table 26.

TABLE 26

HIGH AND LOW LPC SCORERS: CORRELATIONS BETWEEN
TASK AND INTERPERSONAL ITEM SETS

	<u>High LPC</u>	<u>Low LPC</u>	
	Interpersonal Set		
Task Set	- .6**	- .2	** = p<.05
	N = 10	N = 10	

The findings were opposite to those hypothesized. A high correlation was obtained between the task-related and interpersonal-related item sets by high LPC persons, whilst a low correlation was obtained by low LPC persons. However, the hypothesis had been stated in terms of the size of the correlation, without regard to sign. Had high LPC persons obtained a large positive correlation between the task- and interpersonal-related item sets, this would have shown them to be low intrapersonal, interdomain differentiators. As it was, a negative correlation of .6 ($p < .05$) was obtained demonstrating high LPC persons to be high interdomain differentiators. Whilst the low LPC persons also obtained a negative correlation, at $-.2$, this was non-significant. Scatter diagrams of task and interpersonal scores presented separately for high and low LPC groups are to be found. (Figures 25 and 26) The plot of scores shows that some low LPC persons differentiated between domains whilst others did not: hence the low correlation.

Whilst the hypothesis was not supported, the findings suggested that high and low LPC leaders differ from each other in the way they obtain their LPC scores. However the differences are not easily explicable in terms of interdomain differentiation.

6.6 Intradomain Differentiation

Whilst no hypothesis was stated concerning intrapersonal, intradomain differentiation, this analysis was conducted to find out whether high and low LPC scorers differed significantly in: the amount they differentiated within the task domain and the amount they differentiated within the interpersonal domain. The standard deviation of each individual's task-related and interpersonal-related score on the LPC was computed for high and low groups (Table 71, Appendix D). A two-way

FIGURE 25
HIGH LPC GROUP : INDIVIDUALS SCORES ON TASK AND INTERPERSONAL-
RELATED ITEM SETS

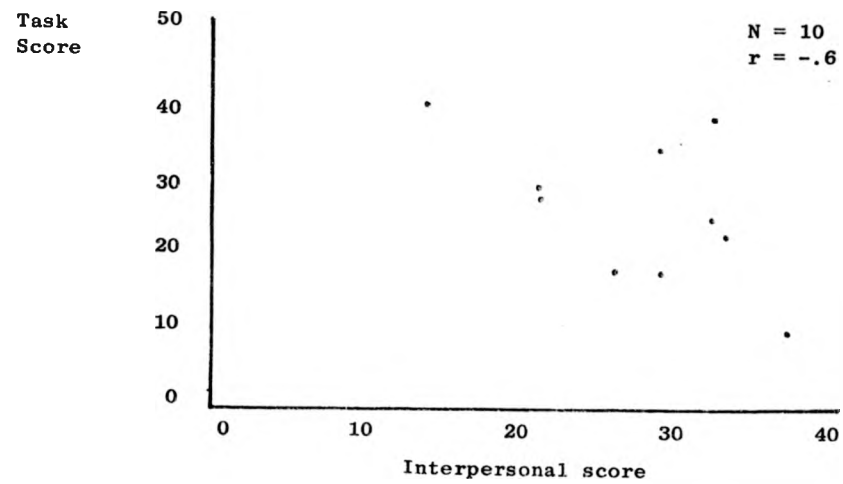
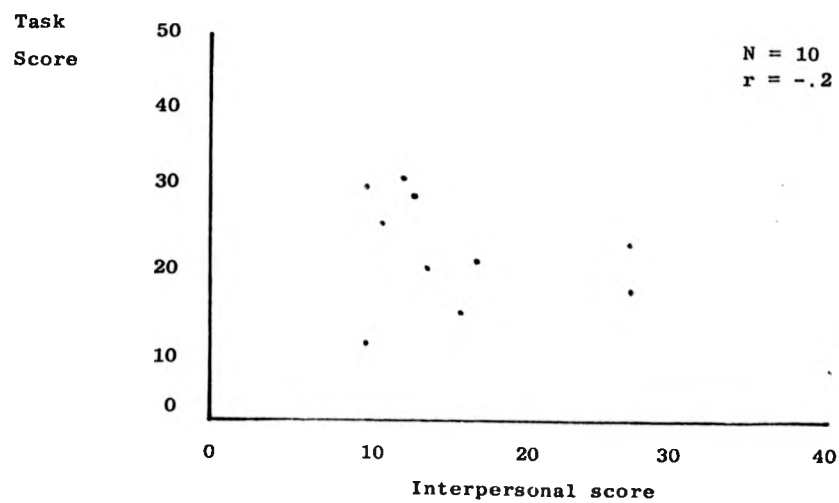


FIGURE 26
LOW LPC GROUP : INDIVIDUALS SCORES ON TASK AND INTERPERSONAL-
RELATED ITEM SETS



factorial analysis of variance with one repeated measure was performed on the data and produced no significant differences.

7. DISCUSSION OF RESULTS

The pilot study was designed to investigate the validity of interpreting LPC and ASO as indicators of cognitive differentiation. To achieve this purpose, and to determine the aspects of differentiation involved, LPC was investigated by internal analysis and by comparison with independent measures of differentiation.

7.1 LPC, ASO, and Measures of Differentiation

The results were in a direction opposite to that which was hypothesized and contrary to the findings of Evans and Dermer (1971) and Mitchell (1970a). A correlation of +.42 ($p < .05$) was obtained between respondents' LPC scores and their scores on the measure of interpersonal differentiation. This demonstrates that low LPC persons differentiated more than high LPC persons. Whilst the correlation between LPC and the measure of intrapersonal differentiation was in the same direction, at +.21 it was non-significant (Table 23, page 155). No curvilinearity was evident in the data.

Replication of this study seemed essential in order to draw valid conclusions from these data. In view of previous findings and the arguments presented in Chapter 5, it seemed reasonable to question the reliability of the results. Whilst the LPC scale and measures of differentiation differed from those used by Evans, and Mitchell, it seemed doubtful that this could account for a reversal in the direction of the findings.

There is the possibility that the high differentiators in our sample scored low on the LPC scale precisely because they did differentiate between the various qualities of their least preferred co-worker and saw him in an unfavourable light. Similarly, the low differentiators may have given relatively high ratings on both sets of items of the LPC and obtained high scores (see Foa et al., 1971). In view of the correlations obtained by the high and low LPC groups between their task-related and interpersonal-related item-set scores on the LPC (Table 26 page 158) this explanation seemed inadequate.

However, whilst this explanation lacked validity in the case of these data, it suggested a possible deficiency in the LPC scale as an indicator of differentiation. This is that respondents are not required to rate one known stimulus object, but each rates his own least preferred co-worker. Therefore it is never possible to know whether or not a respondent has obtained a low LPC score by accurately differentiating the characteristics of the stimulus object or by negative stereotyping (non-differentiation; see Chapter 5)

As part of hypothesis I (page 146) it was stated that persons scoring low on the measure of intrapersonal differentiation would also score low on the measure of interpersonal differentiation. In support of this part of the hypothesis, a correlation of $+0.38$ ($p < .05$) was obtained between these two measures. The size of the correlation, whilst significant, indicates that a number of persons scored high on one measure of differentiation and low on the other. These findings indicate some lack of generality of degree of differentiation within the interpersonal domain of cognition: individuals may have highly differentiated cognitive structures for perceiving differences between people, and yet have relatively undifferentiated cognitive structures for perceiving

differences within people. This suggests that if LPC and ASO do reflect cognitive differentiation in the interpersonal domain, they do not do so in any gross and unitary way but reflect a kind of differentiation. Explanations of the meaning of LPC and ASO, and of why they are related to leadership effectiveness, will have to take this into account.

7.2 Findings Obtained from Internal Analysis of LPC

Persons investigating LPC as a measure of intrapersonal differentiation have done so by three types of internal analysis of the LPC scale. These are: inter-item variation, 'intradomain' (e.g. task) differentiation, and 'interdomain' (between task and interpersonal) differentiation. Of these analyses, two were conducted in this investigation.

One analysis concerned intradomain (non-stereotyped) differentiation. This was conducted for the following reasons. Prior to the recent increase in interest in LPC as a measure of differentiation, interpretations of LPC were primarily in motivational terms. The high LPC leader was seen as being someone who sought to fulfil a 'need' for good interpersonal relations, whilst the low LPC leader was seen as being motivated by success in achievement of the task itself. The unpublished research findings of Mayo, and Taft, were cited by Crockett (1965) in support of his hypothesis that:

individuals for whom interpersonal relations are functionally more important should have more complex cognitive systems with respect to other people than those for whom interpersonal relations are less important. (Page 54)

It follows from this proposition and from the motivational argument with respect to LPC that low LPC persons should differentiate more within the task domain of the LPC than do high LPC persons, and that high LPC persons should differentiate more within the interpersonal domain of the

LPC than do low LPC persons.

In order to investigate this possibility, the standard deviations of high and low LPC persons' scores on the task-related and interpersonal-related item sets of the LPC were compared by a Mann-Whitney 'U' Test. The findings did not support the motivational interpretation of LPC and in addition suggested that intradomain, intrapersonal differentiation is not implicated in the meaning of individuals' LPC scores. This conclusion is supported by the findings of Evans and Dermer who found no significant correlations between total LPC score, high LPC, low LPC and their measure of intradomain differentiation.

It therefore seemed that whatever personal attribute of high LPC leaders distinguishes them from low LPC leaders in their ability to obtain effective group performance, it is not the use of an ability to differentiate within domains intrapersonally.

As part of the hypothesis testing, interdomain correlations were computed using the same procedure as used by Foa et al. and Evans and Dermer, but using a different LPC scale. The results (Table 26, page 159) Figures 25 and 26, page 159) showed that the majority of the high LPC persons differentiated whilst a minority of the low LPC persons did also.

Following the convention of stratifying the sample at the median in order to obtain two equal sized groups for statistical analysis, the research sample was divided into a 'low' LPC group whose range of scores was from 26 to 62 and a 'high' LPC group whose scores were from 63 to 86. Fiedler described the 'high' and 'low' LPC scorers as being the upper and lower thirds of the distribution of LPC scores (Fiedler, 1967, page 43), the middle third of the distribution, range of scores 53 to 72,

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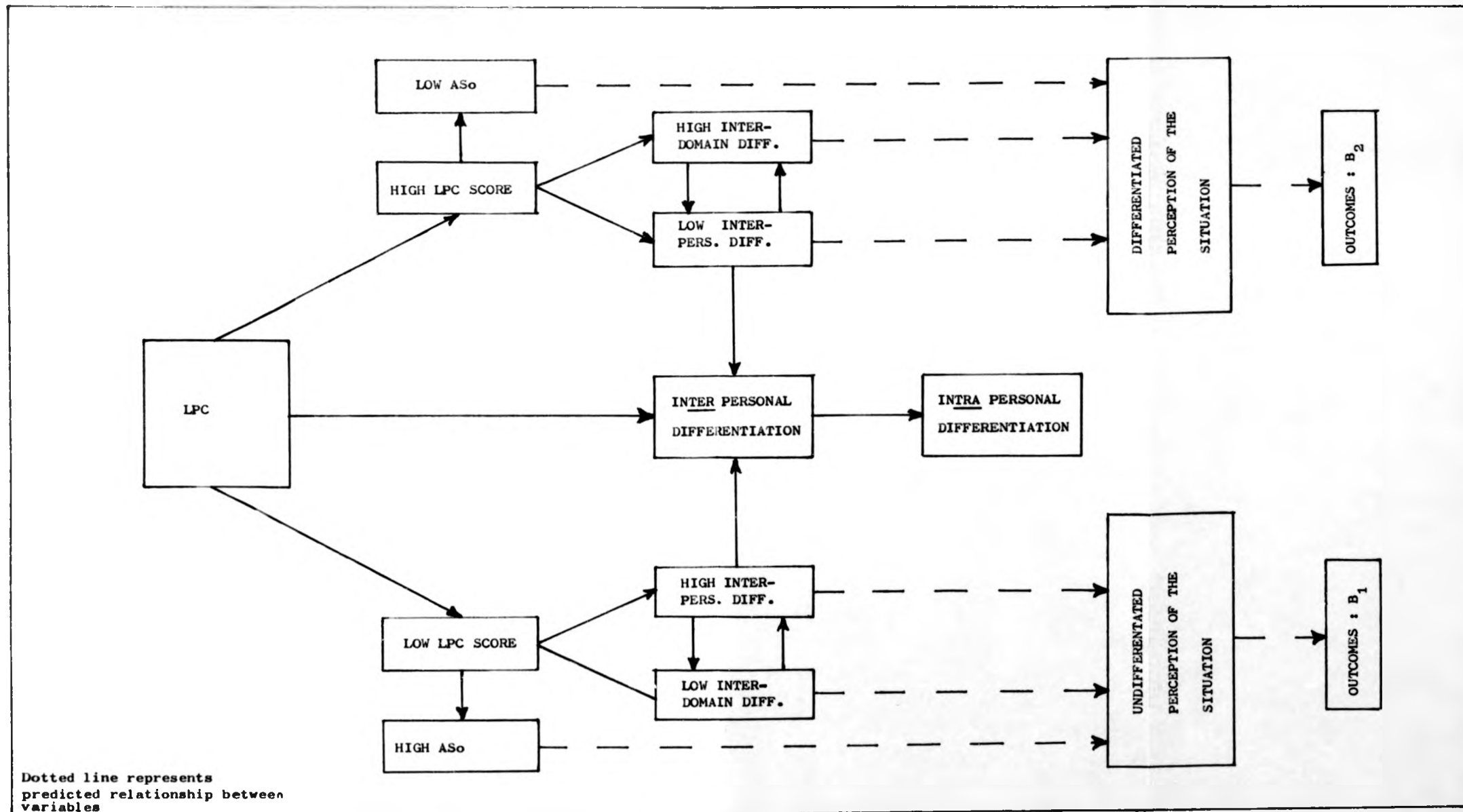
The validity of Fiedler's interpretation was examined in this study in two ways. First, LPC and ASO were correlated, and second, relationships between LPC and other variables were examined and compared with relationships between ASO and those same variables. The results supported Fiedler's practice of interpreting LPC and ASO in a like manner.

8. GENERAL CONCLUSIONS

The results of these analyses showed that the persons tested did not exhibit any general tendency to be either relatively high or relatively low differentiators within the person domain. Instead, the concept of differentiation was found to be multidimensional, LPC being related to some types of differentiation but not others (see Figure 27) LPC scores were found to be related to interpersonal differentiation and intrapersonal, interdomain differentiation. The reliability of the former results were questioned on the grounds that they contradicted previous findings (see page 160). Furthermore, these findings lack explanatory power in that when the scores were dichotomized into low and high LPC groups and within-group correlations calculated between LPC scores and interpersonal differentiation, the relationships were non-significant. Since prediction of leadership effectiveness is made from Fiedler's model on the basis of whether the leader's LPC score is high or low, these findings fail to provide the basis for an explanation of why leadership effectiveness has been found to be contingent on the interaction between LPC scores and situational favourableness.

The other aspect of differentiation found to be significantly related to LPC was intrapersonal, 'interdomain' differentiation. The results showed that the majority of high LPC persons (N=10) differentiated between 'domains' whilst a minority of low LPC persons did also. It was

FIGURE 27
REVISED PARADIGM OF RELATIONSHIPS
BETWEEN VARIABLES



suggested that the point at which the sample is stratified is crucial in maximising the difference between the groups. This finding supported the arguments presented in Chapter 1, where it was suggested that specification of criterion-levels and adherence to those levels are vital in contingency theorising and research.

Foa et al. also obtained results indicative of differences between high and low LPC leaders in the extent to which they differentiate between the task and interpersonal attributes of a person. They interpreted their findings in the context of facet analysis. This led them to conclude that LPC scores reflect differentiation between the task and interpersonal features of all objects, not just persons. This in turn provided them with the basis for a post-hoc 'explanation' of why LPC scores are related to leadership effectiveness.

Following Foa et al.'s line of reasoning, the relationship found between LPC scores and intrapersonal, interdomain differentiation in this investigation may reflect a general tendency to differentiate between the task and interpersonal features of task situations. However, as has already been noted (Chapter 5, page 142), Foa et al.'s interpretation of LPC scores is dependent on the validity of the facet analysis approach. Without this approach, the evidence they cited in support of their interpretation of LPC scores is meaningless. Since the contingency model has been reconceptualised on the basis of this evidence (Foa et al., 1971, page 44), it is crucial that further research be conducted to investigate the generality of differentiation between the task and interpersonal features of objects.

In addition, the behavioural consequences of this tendency to differentiate must be established (see Figure 27). It does not follow that

because an individual differentiates between certain features he necessarily does so 'correctly' or acts accordingly. If the facet analysis approach is to be successful in providing an explanation of the relationship between LPC scores, situational factors, and effectiveness, this cognitive difference between leaders must be shown to have some consequence on the groups' task performance.

CHAPTER 7

INVESTIGATION OF EMPIRICAL RELATIONSHIPS BETWEEN LPC, ASO AND

COGNITIVE DIFFERENTIATION:

MAIN STUDY

1. INTRODUCTION

This chapter presents the results of an attempt to replicate the findings reported in Chapter 6. However a larger sample was used, and all stratifications of LPC data were made in accordance with the criterion levels specified by Fiedler (see Chapter 6, page 163).

Two additional features were incorporated in the research plan. First, in view of Foa et.al's. claims regarding the manner in which high and low LPC persons obtain their LPC scores (see Chapter 5, page 115) it was decided to conduct principal components analyses on the LPC scores of high, moderate and low LPC persons. Three questions might then be answered:

- a) Would one, large, undifferentiated component be found in the LPC scores of low LPC persons?
- b) Would task and interpersonal components be found in the LPC scores of high LPC persons?
- c) How do moderate LPC persons obtain their scores?

Second, it was decided to study subjects without 'leadership experience' (as defined by Fiedler, 1967) as well as subjects with experience of this sort. Much of the research into the meaning of LPC scores has been conducted with student subjects, few of whom would have had leadership experience (see e.g. Mitchell, 1970a). It was speculated that whether or not a person had experience as a leader might influence:

- a) The size of their LPC score;

- b) The way they obtained that score;
- c) Relations between LPC scores and other variables.

If this were found to be the case it would cast doubt on the validity of generalizing findings obtained from students samples to experienced leaders.

2. HYPOTHESES

Hypotheses I - IV (see Chapter 6, page 146) were tested using the sample of subjects with leadership experience (as in the pilot study). No hypotheses were stated with respect to anticipated relationships in the 'without experience' sample. It was expected that experience as a leader would moderate the relationships between the measures, however the direction of the differences between the 'with' and 'without' experience samples was not predictable.

3. SUBJECTS

The total sample consisted of 94 males. They were all part-time 'post-experience' students attending courses in Management Studies. Their occupations included: city-treasurers, supervisors and superintendents in various car manufacturers, works managers and graduate trainees. Forty-nine of the subjects had leadership experience.

4. PROCEDURE

The subjects were required to attend lectures on leadership behaviour and effectiveness as part of their studies. 'Trait' and 'technique' approaches were discussed and the contingency approach introduced. The subjects were then requested to complete the research instruments as a learning exercise. It was stressed that the questionnaires were not 'tests' and that the results were to be used for research purposes.

Having completed the questionnaires the subjects were told how to score them and the significance of the measures was explained.

5. RESULTS: SUBJECTS WITH LEADERSHIP EXPERIENCE

Means and standard-deviations for each measure are presented in Tables 27 and 28. These were similar to those obtained in the pilot study.

5.1 Results: hypothesis I (see page 146)

LPC, intrapersonal (intra) and interpersonal (inter) differentiation scores were correlated using Pearsons product-moment method. Coefficients of -.02 (LPC and Intra) and +.23 (LPC and Inter) were obtained, neither of which were statistically significant (Table 29). Consequently Hypothesis I was not supported. Furthermore this result failed to replicate the correlation of +.42 (LPC and Inter) obtained in the pilot-study (see Chapter 6, page 159).

The sample was stratified into high, moderate and low LPC groups, enabling a more sensitive test of the hypothesis (see Chapter 6, page 160). Within group correlations were calculated between LPC, intra and inter, none of which were significantly different from zero (Table 30).

As in the pilot study, these results failed to support the hypothesis.

TABLE 27

INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION:
MEANS AND STANDARD DEVIATIONS OF THE WITH EXPERIENCE SAMPLE

	<u>Intra</u>	<u>Inter</u>
\bar{X}	129	107
SD	27	25

N = 49

TABLE 28

COWORKER SCALES:MEANS AND STANDARD DEVIATIONS OF THE WITH EXPERIENCE SAMPLE

	<u>LPC</u>	<u>MPC</u>	<u>ASO</u>
\bar{X}	60	100	13.8
SD	12	9	3.0

N = 49

TABLE 29

CORRELATIONS:COWORKER SCALES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION;WITH EXPERIENCE SAMPLE

	<u>LPC</u>	<u>ASO</u>	<u>INTRA</u>	<u>INTER</u>
MPC	-.08	.50***	-.04	-.10
LPC		-.58***	-.02	.23
ASO			-.21	-.26
INTRA				.39***

N = 49

***p < .005

TABLE 30

RELATIONSHIPS BETWEEN THE MEASURES: WITH EXPERIENCE SAMPLE

	Lo LPC	MoD LPC	High LPC	TOTAL
LPC and D	-.32	-.52***	.06	-.58***
Inter and Intra	.16	.21	.81***	.39***
Inter and LPC	.41	.11	-.24	.23
Inter and D	.09	-.40**	-.73***	-.26
Intra and LPC	-.34	-.06	-.02	-.02
Intra and D	-.11	-.03	-.68**	-.21
Task and Social	-.45*	-.66***	-.63**	-.19
	N = 14	N = 24	N = 10	N = 48

* p < .05; ** p < .025; ***p < .005.

5.2 Results: hypothesis II (see page 146).

A correlation of -.58 was obtained between the LPC and D scores (ASo) of experienced subjects. Whilst this was highly significant ($p < .005$) it showed that LPC and D scores shared only one-third of the total variance.

When the sample was stratified into high, moderate and low LPC groups only the moderate LPC scorers obtained a significant correlation between LPC and D ($r = .52$, $p = .005$). In the low LPC group the value of r was -.32, whilst in the high LPC group it was +.06.

These results provided little support for the hypothesis and suggest that Fiedler's practice of substituting ASo (D scores) for LPC may be particularly invalid in the case of high LPC scorers.

5.3 Results: hypothesis III (see page 146)

Negative correlation coefficients of -.26 (Inter and D) and -.21

(Intra and D) were obtained. Neither of these correlations differed significantly from zero.

Correlations between D intrapersonal differentiation and interpersonal differentiation were computed separately for high, moderate and low LPC groups. Considering first the relationships between D scores and interpersonal differentiation, two of the three correlations were significant (see Table 30). In the high LPC sample the correlation was $-.73$ ($p < .005$), whilst in the moderate LPC sample it was $-.40$ ($p < .025$). These results show systematic relationships between D scores and interpersonal differentiation in the case of moderate and high LPC persons. However the direction of the relationship was opposite to that predicted.

In the case of intrapersonal differentiation and D scores, small, non-significant correlations were obtained in both the low and moderate LPC groups. In the high LPC sample a correlation of $-.68$ ($p < .025$) was obtained. As in the case of interpersonal differentiation, these results showed that the persons who obtained the highest D scores within the high LPC sample were the highest differentiators. However the mean D score of the high LPC sample was the lowest of the three samples (see Tables 31 and 32).

These findings failed to support hypothesis III. However they did suggest that in the case of high LPC scorers, D scores (ASo) are related to intrapersonal and interpersonal differentiation. In other words, the size of the LPC score moderates the relationship between these variables.

TABLE 31

DISTRIBUTION OF D SCORES IN HIGH, MODERATE AND LOW LPC SUB-SAMPLES

	LOW	MODERATE	HIGH
\bar{X}	15.9	13.5	11.6
SD	2.4	2.9	2.7
RANGE	11 - 20	8 - 19	7 - 16
N =	14	24	10

TABLE 32

MANN-WHITNEY' U' TESTS ON D SCORES OF LOW, MODERATE AND HIGH LPC GROUPS

COMPARISONS

	LOW AND HIGH	LOW AND MODERATE	MODERATE AND HIGH
VALUE OF U	14	51.5	225
CRITICAL VALUE	19	Z = 3.5	Z = 3.9
SIGNIFICANCE*	<.002	<.0002	<.00005

*Two-tailed

5.4 Results: hypothesis IV (see page 145)

A principal-components analysis was performed on the LPC scores of the experienced leaders. This revealed five task-related and five interpersonal-related items (Table 33). However the definition of the task and interpersonal item sets differed from the pilot study: different components were identified showing that the respondents used the scales in a different way (see Appendix D, Table 69)

A task score and an interpersonal score were derived from every

LPC scale. These scores were uncorrelated ($r = -.19$). When the samples were stratified, correlations of $-.63$ ($p < .025$), $-.66$ ($p < .005$), and $-.45$ ($p < .05$) were obtained in the high, moderate and low LPC sub-samples respectively (Table 34).

These results provided no support for hypothesis IV, nor did they reflect any differences between high, moderate and low LPC leaders.

TABLE 33

ITEMS SELECTED ON THE BASIS OF PRINCIPAL COMPONENTS INFORMATION TO DEFINE

THE TASK AND INTERPERSONAL ITEMS SETS OF THE LPC

<u>TASK</u>			<u>INTERPERSONAL</u>		
Efficient	-	Inefficient	Pleasant	-	Unpleasant
Helpful	-	Unhelpful	Friendly	-	Unfriendly
Productive	-	Unproductive	Warm	-	Cold
Reliable	-	Unreliable	Cheerful	-	Gloomy
Careful	-	Careless	Distant	-	Close

TABLE 34

RESEARCH FINDINGS: CORRELATIONS BETWEEN 'TASK' AND 'INTERPERSONAL' ITEM

SETS OF THE LPC SCALE

		WITH EXP.			NO EXP.		
		Lo	Mod	Hi	Lo	Mod	Hi
FOA et al 1971	$r =$				+.2		-.05
	$N =$					147	
PILOT STUDY	$r =$	-.2	-	-.6			
	$N =$	10	-	10			
MAIN STUDY	$r =$	-.45*	-.66***	-.63**	-.48*	-.68***	-.10
	$N =$	14	24	10	15	22	8

* = $p < .05$; ** = $p < .025$; *** = $p < .005$.

6. COMPARISONS BETWEEN WITH-EXPERIENCE AND WITHOUT-EXPERIENCE SAMPLES:
RELATIONSHIPS BETWEEN MEASURES.

Means and standard-deviations of the without-experience subjects are presented in Tables 35 and 36. The values of these statistics were very similar to those obtained in the with-experience sample (see Tables 27 and 28).

TABLE 35

FIEDLERS CO-WORKER MEASURES: MEANS AND STANDARD-DEVIATIONS OF WITHOUT
EXPERIENCE SAMPLE

	LPC	MPC	D
\bar{X}	59	101	13.9
SD	13	10	3.7
N = 45			

TABLE 36

INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION: MEANS AND STANDARD
DEVIATIONS OF WITHOUT-EXPERIENCE SAMPLE

	INTRA	INTER
\bar{X}	122	116
SD	27	34
N = 45		

Two sorts of comparison between the with and without-experience samples were conducted to answer the following questions:

- (a) Considering the data as a whole, do similar relationships exist between variables in both samples (Total sample comparisons).
- (b) When the data is stratified into low, moderate and high LPC sub-samples, do similar relationships exist in comparable sub-samples of 'with' and 'without' experience persons (stratified sample comparisons).

6.1 Total sample comparisons

Relationships between the measures were calculated in the without experience sample (Table 37) and compared with those found in the with experience sample (Table 29). Two significant between-sample differences were found. The first concerned LPC and D scores: significant correlations were obtained in the 'with experience' ($r = .58$) and 'without experience' ($r = .81$) samples, these being significantly different from each other ($p < .02$, $Z = 2.05$). These results showed LPC and D (ASo) to be more strongly associated in the 'without experience' sample.

Second, the relationship between intrapersonal and interpersonal differentiation differed in the 'with' ($+39$, $p < .005$) and 'without experience' ($+63$, $p < .005$) samples. Again, the data showed a stronger degree of association in the 'without experience' group ($p < .06$, $Z = 1.54$).

These results suggest that leadership experience moderates the relationship between Fiedler's predictor measures, and affects the extent to which similar degrees of intrapersonal and interpersonal differentiation are displayed by an individual.

6.2 Stratified sample comparison

Relationships between the measures were assessed in the 'without experience' sample (Table 38). Comparisons between sub-groups having the same size LPC scores but different experience of leadership are given in Table 39. As the Table shows, most of the differences between the sub-samples occurred for subjects with high LPC scores.

These results suggest that the moderator effects of leadership experience vary with the size of an individual's LPC score.

Groups having different LPC scores were also compared. Of the thirty-six possible comparisons between low, moderate and high LPC groups, fifteen were statistically significant. (See Table 40). The majority of these differences were between the low and high, and moderate and high LPC groups.

TABLE 37

CORRELATIONS:COWORKER SCALES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATIONWITHOUT EXPERIENCE SAMPLE

MPC	-26	+47***	-14	-15
LPC		-81***	00	-05
ASO			-13	-09
INTRA				+63***

N = 45

*** p < .005

TABLE 38

RELATIONSHIPS BETWEEN THE MEASURES:WITHOUT EXPERIENCE SAMPLE

	LO LPC	mod LPC	high LPC	TOTAL
LPC and D	-59	-47**	-49	-81***
Inter and Intra	+88***	+50**	-22	+63***
Inter and LPC	-24	+24	-54	-05
Inter and D	+24	-53***	+63*	-09
Intra and LPC	-47*	+12	+67	00
Intra and D	+30	-42**	-74**	-13
Task and Social	-48*	-68***	-10	
	N=15	N=22	N=8	N=45

*p < .05; **p < .25 ***p < .005

TABLE 39

COMPARISON OF WITH AND WITHOUT EXPERIENCE SUBJECTS HAVING THE SAME LPC SCORE

(LOW, MODERATE OR HIGH)

	HIGH		MODERATE		LOW	
	WITH	WITHOUT	WITH	WITHOUT	WITH	WITHOUT
INTER/INTRA	r + 81	r - 22	r + 21	r + 50	r + 16	r + 88
	z = 1.76		z = 1.06		z = 2.9	
	p < .05		p, ns		p < .001	
INTER/LPC	r - 24	r - 54	r + 11	r + 24	r + 41	r - 24
	z = .61		z = .43		z = 1.63	
	p, ns		p, ns		p < .05	
INTER/ASo	r - 73	r + 63	r - 40	r - 53	r + 09	r + 24
	z = 2.85		z = .52		z = .37	
	p < .005		p, ns		p, ns	
INTRA/LPC	r - 02	r + 67	r - 06	r + 12	r - 34	r - 47
	z = 1.41		z = .57		z = .37	
	p, ns		p, ns		p, ns	
INTRA/ASo	r - 68	r - 74	r - 03	r - 42	r - 11	r + 30
	z = .20		z = 1.51		z = 1.0	
	p, ns		p, ns		p, ns	
TASK/SOCIAL	r - 63	r - 10	r - 66	r - 68	r - 45	r - 48
	z = 1.1		z = .11		z = .09	
	p, ns		p, ns		p, ns	
	N = 10	N = 8	N = 24	N = 22	N = 14	N = 15

TABLE 40

COMPARISON OF SUBJECTS WITH SIMILAR LEADERSHIP EXPERIENCE BUT DIFFERENT LPC

SCORES (HIGH, MODERATE, LOW)

	LOW / MODERATE		LOW / HIGH		MODERATE / HIGH	
	WITH	WITHOUT	WITH	WITHOUT	WITH	WITHOUT
LPC/ASo	0.51	0.44	1.07	0.26	1.46	0.05
INTRA/INTER	0.14	2.18**	2.0 **	3.0 ***	2.1 **	1.54 *
INTER/LPC	0.88	1.29	1.4 *	0.66	0.81	1.68**
INTER/ASo	1.4	2.3 *	1.69**	0.92	1.16	2.66***
INTRA/LPC	0.08	1.75**	0.91	2.5 **	0.09	1.38*
INTRA/ASo	0.21	2.1 **	1.96**	2.4 **	1.97	0.99
TASK/SOCIAL	0.83	0.8	0.70	0.78	0.12	1.45

*
p < .10**
p < .05***
p < .005

NOTE: All figures are z scores

Ten of these fifteen differences were in the 'without experience' sample. In this sample, LPC, ASo and differentiation were often significantly related, however, the size and direction of the relationship varied with the size of an individual's LPC score.

The one relationship which seemed little influenced either by size of LPC score or by leadership experience was the relationship between ASo and LPC scores (Table 30). Only one comparison, - between the moderate and high LPC scorers in the 'with experience' sample, showed a significant difference (see Table 38).

In conclusion, these results suggest that the LPC scale is multi-dimensional, and relates non-linearly to other variables. Furthermore the size and direction of the relationship appears to be influenced by whether or not a respondent has leadership experience. It appears that LPC and ASo are sometimes related to degree of interpersonal and intra-personal differentiation depending on the size of an individual's LPC score and their experience as a leader.

7. COMPARISONS BETWEEN WITH-EXPERIENCE AND WITHOUT EXPERIENCE SAMPLES:
PRINCIPAL COMPONENTS OF THE LPC SCALE

Principal components analyses were conducted to see if respondents with leadership experience differed from those without experience in the way they obtained their LPC scores. The results could also be used to verify the status (task or interpersonal) of the items in the LPC scale.

A summary description of the first three components is presented in Table 41. The full results can be found in Table 72 (Appendix D). The same three components were obtained in both the with and without-experience samples. The first component was an 'interpersonal' factor, and the second two were task factors.

Comparison of the results of the with experience sample with the

TABLE 41

SUMMARY TABLE OF THE PRINCIPAL COMPONENTS OF THE 'WITH EXPERIENCE' AND
'WITHOUT EXPERIENCE' LPC ITEM DATA*

			<u>COMPONENT</u>		
			1	2	3
WITH EXPERIENCE	Unpleasant	38	Adventurous	.41	Efficient .39
	Unfriendly	-42	Ambitious	.41	Helpful .39
	Cold	-44	Enterprising	.59	Considerate .30
	Gloomy	-37	Interesting	.30	Reliable .46
	Distant	-28			Careful .47
WITHOUT EXPERIENCE	Unpleasant	-41	Helpful	.37	Adventurous .55
	Unfriendly	-38	Productive	.39	Ambitious .42
	Cold	-43	Reliable	.45	Enterprising .44
	Gloomy	-29	Careful	.43	Interesting .34
	Distant	-34			
	Guarded	-29			

NOTE: See Table 72 for the complete results of the principal components analysis.

* This Table excludes:

- 1) Items which load on more than one component - here defined as "impure";
- 2) Items with low loadings (less than .26) on the first three components, - here defined as 'irrelevant'.

pilot-study sample (also experienced) revealed different principal components. A low level of inter-subject reliability in the way the items were used seemed indicated (see Tables 41 and 72).

7.1 PRINCIPAL COMPONENTS OF THE LPC SCALE: COMPARISON OF EXPERIENCED LEADERS HAVING HIGH, MODERATE AND LOW LPC SCORES

This analysis was conducted to see how high, moderate and low LPC leaders obtained their scores. Only the scores of those respondents with leadership experience were analyzed. The item loadings on the first three components are presented in Table 42 (see Table 72 , Appendix D for full analysis).

Four main points emerged from these results:

- a) None of the components obtained in the three sub-samples matched those identified in the total (with experience) sample (see Tables 41 and 72). Not only were the items different, but also the mix of positive and negative items.
- b) Considerable differences were observed between the components extracted from each of the sub-samples. Both the items themselves, and the number of items in each component differed. These results suggested that the high, moderate and low LPC leaders differed from each other in the qualities they attributed to their least preferred coworker. In other words they did not simply differ by uniformly attributing low, moderate or high ratings since this would have resulted in the same components in each of the sub-samples.
- c) The sub-samples differed in the proportion of the total variance extracted by the first three factors. In the high LPC sub-sample it was 55 per cent, whilst in the moderate and low LPC groups it was 70 per cent and 65 per cent respectively (see Table 72 , Appendix D). In addition, the relations between the components appeared

TABLE 42

SUMMARY TABLE OF PRINCIPAL COMPONENTS OF HIGH,
 MODERATE AND LOW LPC ITEM DATA*: WITH EXPERIENCE SAMPLE

<u>LPC</u>	COMPONENT					
	1		2		3	
HIGH	Efficient	.37	Reliable	.37	Considerate	.52
	Unfriendly	-.39	Unenterprising	-.43	Unambitious	-.43
	Cold	-.37	Boring	-.44	Guarded	-.37
MODERATE	Unpleasant	-.39	Unambitious	-.41	Cold	-.55
	Unfriendly	-.43	Careful	.40	Unreliable	-.35
LOW	Unpleasant	-.38	Reliable	.40	Close	.44
	Inconsiderate	-.36	Guarded	-.39	Boring	-.57
	Ambitious	.33				
	Enterprising	.34				

N = 48

* This Table excludes:

- (1) Items which load on more than one component, - here defined as "impure".
- (2) Items with low loadings (i.e. less than .26) on the first three components, - here defined as "irrelevant".

to differ in each of the sub-samples. In the case of the high LPC group the first three components appeared to be independant. This did not seem to be the case in the moderate and low LPC groups.

- d) No 'task' or 'interpersonal' components were identified in any of the sub-samples. Each of the components contained a mixture of items previously identified as being either task or interpersonal related. These findings cast doubt on the validity of defining items as being task or interpersonal related on the basis of principal components analyses of total-sample distributions of LPC scores. They also call into question the validity of Foa et al's a priori arguments regarding the manner in which high and low LPC persons obtain their scores.

8. DISCUSSION OF RESULTS

The data analyses reported in this chapter were conducted for two main reasons: to investigate the psychometric properties of the LPC scale, and to further investigate the relations between LPC, ASo and differentiation. The results are discussed under these headings.

8.1. Relations between LPC, ASo and other Variables

The results of the main study had two major implications, the size of an individuals LPC score, and whether or not they have worked as leaders, influences the relationship between LPC scores, ASo and differentiation.

The results described in Sections 5 and 6 showed that high, moderate and low LPC scores reflect different attributes. These findings suggest the reason why significant relationships between LPC scores and other variables have been so hard to find. Assuming that these findings are

valid, i.e., that the LPC scale is multidimensional, any investigation where a total sample distribution of LPC scores is correlated with scores on other variables, would be unlikely to find significant relationships. This would be because the different properties of high, moderate and low LPC scorers would tend to 'cancel' each other out. Therefore, investigations such as that conducted by Bass et.al. would be unlikely to obtain significant results, and if significant results were obtained, they would not be replicated if the distribution of LPC scores changed in subsequent studies.

These observations suggested a parsimonious explanation of why:

"attempts to find consistent relations with ASo and LPC scores seemed to be consistent and reliable only in leading to repeated frustration" (see page 49),

and why the few significant relationships which have been observed have not been replicated.

These findings were seen to reflect upon the validity of substituting LPC scores for ASo (D scores). Conclusions regarding the relationship between these two variables have been based on total-sample distributions of scores. Such correlations have usually been large and statistically significant. For example, in the pilot study a correlation of -85 ($p < .005$; $N = 20$) was obtained. In this study, with a larger sample, the correlation was -58 ($p < .005$; $N = 49$). However in the low LPC group the correlation was -32 (ns) whilst in the high LPC group it was +06. These results suggest that LPC and D scores (ASo) may reflect different qualities in the case of the low and high LPC scorers.

The size of the correlations in the sub-samples might have been due to a drop in sample-size. However other results also suggested that LPC and D scores reflect different attributes. For example relationships between D and differentiation differed from those observed between LPC and differentiation. In one sub-sample the correlation between D scores and inter was -73 whilst the correlation between LPC and inter was -24. These

findings implied that different explanations would be required to explain a contingency graph involving D scores (ASo) and one involving LPC scores. The significance of these findings lies in the fact that much of the data on which the contingency model was based involved D scores, whereas in the validation studies, LPC scores have generally been used.

The results of these investigations suggested what attributes are reflected by D and LPC scores respectively. As was hypothesized, LPC, D scores and differentiation were associated, though not in any consistent (or predicted) manner. D scores, intrapersonal and interpersonal differentiation were most frequently associated, seven of the twelve correlations being significant. Significant correlations were obtained only in the moderate and high LPC groups, the size and direction of the relationship being moderated by whether or not the subjects had leadership experience.

Few significant relationships were found between LPC scores and differentiation: only two of the twelve correlations were significant, both being obtained in the without experience sample. The direction of the relationship was moderated by the size of the LPC score.

These findings were taken to suggest that it would be premature to reject an explanation of the meaning of Fiedlers predictor measures in terms of cognitive differentiation. However the relationships were considerably more complex than was hypothesized. The results of the pilot study suggested that differentiation was not a general trait or disposition, and that some type(s) of differentiation appeared to be reflected by LPC and ASo. The results of the main study supported these conclusions and supported the inference (based on the results of the pilot study) that LPC scores were multidimensional.

Unfortunately, these findings left attempts to understand the meaning of Fiedler's predictor measures in a theoretically arid state. The complexity of the observed relationship was not predictable on the

basis of any theory known to the author. Furthermore, on an a priori basis it was equally possible to provide a post-hoc 'explanation' as to why high, moderate or low LPC persons should be the highest differentiators. Whilst it was perhaps unsurprising that leadership experience should moderate the relationships between the variables, it was not possible to predict how they would be modified, nor was it possible to develop a satisfactory post-hoc explanation of the precise details of findings.

8.2 Investigations into the psychometric properties of the LPC scale

Results obtained from analyses of the internal properties of the LPC scale have suggested it to be multidimensional (Yukl, 1970; Evans, 1971). Such findings provoked doubts regarding the use of total LPC scores as indicators of leadership effectiveness. At the start of this research it was felt that if LPC scores were related to effectiveness, then data which provided a valid interpretation of the meaning of LPC scores could be used to 'clean-up' the LPC scale, or to guide the selection of a satisfactory alternative.

In order to further investigate the meaning of LPC scores, a revised LPC scale was constructed with known internal characteristics (see Chapter 6, page 48). A principal components analysis conducted in the pilot study showed the scale to contain six task-related and six interpersonal-related adjectives. In the main investigation, principal components analysis of the 'with' and 'without experience' samples, and of high, moderate and low LPC sub-samples revealed the following:

- a) In both the with and without experience samples, similar components were identified (see page 177). These were not the same as the components found in the pilot study.
- b) In the high, moderate and low LPC samples (with experience only), little similarity was evidenced in the components extracted.

Furthermore, none of the components could be described as either task-related or interpersonal-related.

These results seemed to suggest that whilst leadership experience had little effect on the way respondents obtained their LPC scores, different levels of LPC score (high, moderate and low) were obtained in different ways. Furthermore, the results of the high, moderate and low LPC sub-sample analyses questioned the validity of defining items (as either task or interpersonal-related) on the basis of principal components analyses of total sample distributions.

With respect to the latter inference, two alternatives seemed available: either to reject the notion that the LPC scale consists of task and interpersonal items, or to assume that such items exist but only when defined on an a priori basis. Many authors who have distinguished between these two sorts of item have done so on the basis of principal components analyses (e.g., Yukl, 1970; Evans, 1971; Mitchell, 1970). One of the drawbacks with this technique was revealed in this study, when components were identified containing some items which, a priori, seemed to be task-related, and others which a priori seemed to be interpersonal related.

On both logical and empirical grounds, one would expect some respondents to rate their least preferred coworker favourably on some task and interpersonal-related adjectives and unfavourably on others. If respondents did obtain their scores in such a way, the application of factor analysis would inevitably result in the identification of factors containing a mixture of 'task' and 'interpersonal'-related items. It would also be possible to obtain principal components which are 'task' and 'interpersonal'. The point is that since this will not necessarily be the case, it is inappropriate to define items on the basis of principal components information.

Whilst principal components analyses cannot be used to define items as being task or interpersonal-related, they can be used to evaluate a priori arguments regarding the ways in which high, moderate and low LPC persons obtain their scores (see Fishbein, Landy and Hatch 1965; Foa et al, 1971). Such arguments have provided the **basis for anticipating** relationships between LPC scores and cognitive differentiation. For example Foa et al claimed that high and low LPC persons differ in the variability of their ratings and that they do so in a systematic way. High LPC persons were said to rate their coworker favourably (i.e., high) on interpersonal-related items and unfavourably on task-related-items. On the other hand, low LPC scorers **were suggested to rate their least-preferred coworker unfavourably on both types of items.**

In order to assess the validity of these arguments, it was necessary to identify the task and interpersonal-related items and observe their distribution and relationships within the principal components. Identification of the two types of **adjectives** was done by a priori means as earlier advocated. The investigator and an independent judge assigned the items as follows:

- a) Task: efficient, helpful, productive, adventurous, reliable, ambitious, enterprising, careful.
- b) Interpersonal: pleasant, friendly, considerate, warm, cheerful, close, open, interesting.

To find support for Foa et al's arguments (ibid), the following results should have been obtained. In the case of the high LPC scorers, two components should have been identified, one consisting of interpersonal items having positive loadings, and the other being defined by negatively loaded task items. The low LPC scorers should have been found to obtain one large component consisting of negative descriptions on both types of item. That this was not the case can be seen by examining Table 42.

In consequence, these results failed to support Foa et al's contentions regarding the ways in which high and low LPC scores are obtained. In particular, they failed to support Foa et al's hypothesis that high and low LPC persons differ in the degree to which they differentiate between the task and interpersonal attributes of their least preferred coworker.

9. CONCLUSIONS

The conclusions reached on the basis of the results reported in this chapter may be summarised as follows:-

- a) LPC scores and D scores (ASo) reflect different attributes, therefore LPC scores should not be substituted for D scores.
- b) LPC is multidimensional: different relationships are observed with other variables depending on the size of the LPC score and on whether or not the scorer has leadership experience.
- c) 'Differentiation' is a multidimensional concept: Intrapersonal and interpersonal differentiation appear to be related to LPC and D scores in complex and unpredictable ways. However, persons who differ in the size of their LPC score do not appear to differ in the degree to which they differentiate between the task and interpersonal-related attributes of their least preferred coworker (intrapersonal, inter-domain differentiation).
- d) In the case of experienced leaders, LPC scores do not appear to reflect the types of differentiation investigated.
- e) High and low LPC persons do not obtain their scores in the way Foa et al claimed they do.

LPC SCORES, LEADERSHIP EXPERIENCE AND SUBJECTS PERCEPTIONS OF DIFFERENT
LEADER BEHAVIOURS

1. INTRODUCTION

In Chapter 5 of this thesis an information processing interpretation of Fiedler's predictor measures was described and discussed. In particular, LPC and ASo were examined as possible correlates of an individual difference dimension called "cognitive differentiation". It was concluded that differentiation is a multidimensional concept and that many of the relevant studies have found significant relationships between LPC/ASo and some type of differentiation.

A research programme was designed and executed in order to further test and clarify these relationships. The results of that programme were reported in Chapters 6 and 7. Whilst they showed significant relationships between LPC/ASo and certain types of differentiation, the relationships were considerably more complex than was predicted. More precisely, whether or not the variables were significantly associated appeared to depend upon the size of an individual's LPC score (high, moderate or low) and on whether they had leadership experience.

The results certainly did not provide the basis for unqualified support of an interpretation of LPC/ASo in terms of differentiation. Where low and moderate LPC scorers, without leadership experience were concerned, LPC and ASo seemed unrelated to the types of differentiation examined (see Table 38, page 176). Despite this, there were two factors which suggested the most promising line of research might be to continue to investigate Fiedler's predictor measures as correlates of differentiation.

- (a) Of those studies which have investigated LPC and ASo as possible indicators of differentiation, the majority have obtained evidence in

support of such an interpretation (see Chapter 5). Research involving other individual difference dimensions has been:

"consistent and reliable only in leading to repeated frustration".

Fiedler, 1967 page 49

- (b) A rationale existed for expecting LPC and ASo to reflect differentiation. Furthermore, this rationale provided an explanation of why high and low LPC leaders differ in their effectiveness. This contrasted with other lines of enquiry where relationships were sought between LPC and any individual-difference variable, regardless of whether or not it could explain why high and low LPC leaders differed in their effectiveness (see Chapter 5, page 140).

Given that LPC and ASo were to be examined as correlates of differentiation, the question became: what kind(s) of differentiation. The arguments and evidence presented in Chapters 5, 6 and 7 demonstrated that the concept was multidimensional. Furthermore, there seemed no strong arguments to suggest that Fiedler's predictors reflected one type of differentiation rather than another. Therefore, this decision was made by considering the implications of a contingency approach to leadership effectiveness.

The central postulate of a contingency approach is that no single set of leadership behaviours will be equally effective in 'all' leadership situations. It follows from this that for a leader to be effective in a wide variety of settings he must vary his behaviour appropriately (what is 'appropriate' is an empirical question).

In order to do this there are a priori a number of information processing abilities which a leader must possess. He must be able to recognize:

- (a) Different types of leadership behaviour;

- (b) different leadership situations; and
- (c) the appropriateness of different behaviours to the various situations.

These considerations suggested a number of 'domains' of perception which are associated with leadership effectiveness, therefore leaders who differ in their LPC scores, might also differ in their information processing abilities in these domains. For example it might be that low, moderate and high LPC scorers differ in their ability to diagnose different sets of leadership behaviours.

Lowin, Hrapchak and Kavanagh (1969) examined subjects perceptions of different leadership behaviours by manipulating independantly a supervisors consideration and initiation of structure (see Chapter 3, page 61). They found that the supervisor was perceived to be more considerate when he was low rather than high on initiating structure.

Lowin et al's subjects were students who probably had no leadership experience. In Chapter 2 it was argued that leadership experience might influence the meaning of subjects LPC scores. The results reported in Chapter 7 confirmed this speculation, and showed that the effects of leadership experience varied depending on the size of the subjects LPC score (high, moderate or low).

These findings suggested that whether or not Lowin et al's results were replicated might depend on the size of the subjects LPC score, and whether or not they had leadership experience. If, as has been argued, high LPC persons are high 'differentiators' (in some particular sense), they should

differentiate between the leader's consideration and initiating-structure behaviours. Therefore, if these behaviours were manipulated independently, high LPC scorers should perceive them as such. On the other hand, low LPC persons, who have been argued to be relatively low differentiators, would perceive consideration and initiating structure as interdependent.

These differences would be reflected in subjects perceptions of the leaders consideration behaviours. If subjects differentiated between consideration and initiating structure (i.e., saw them as independant), their perceptions of the leaders consideration would be unaffected by the manipulation of initiating structure. In other words, if the consideration manipulation were high, consideration would be perceived as high whether the structure manipulation were high or low.

It seemed reasonable to expect that moderate LPC scorers, like low LPC persons, would perceive consideration and initiating structure as interdepent (i.e., they would fail to differentiate). This was thought to be likely on the grounds that a high proportion of Lowin et al's subjects who perceived consideration and structure to be interdependant, would have been moderate LPC scorers (half the subjects in the main study had moderate LPC scores).

The likely effects of differences in leadership experience were more difficult to predict. The results reported in Chapter 7 showed that the effects varied with the size of a subjects LPC score. However, the relationships were too complex to allow specific predictions to be made. Nevertheless it seemed reasonable to speculate that LPC scores and experience might interact and jointly affect subjects perceptions of different leader behaviours.

It was decided to investigate these possibilities using an experimental design similar to that employed by Lowin et al. Four audio tapes of different combinations of consideration and initiating structure (see Chapter 3, page) were prepared as follows:-

- (a) high consideration/high structure;
- (b) high consideration/low structure;
- (c) low consideration/high structure;
- (d) low consideration/low structure.

This experiment was seen as providing a more direct test of information processing skills relevant to a leaders job than would be possible for example using Bierli's MRT (see Chapter 6). This experiment also provided a test of the claim that leaders can be high on both dimensions of behaviour: consideration and structure. As was noted by Larson et al (1976):

"It is almost an article of faith among academicians and many practitioners that leaders who are high in both task and socio-emotional behaviours will have more satisfied and/or productive subordinates than those who are not".

ibid, page 628

Implicit in this 'article of faith' is the assumption that the two dimensions of behaviour are independant and that subordinates can perceive them separately. Whilst many authors have reported correlations suggesting consideration and initiating structure to be orthogonal (e.g. Fleishman, 1953; Halpin and Winer, 1957), others have found them to be correlated (e.g. Weissenberg and Kavanagh, 1972). These latter findings may be explained either in terms of the leaders actual behaviour, or they may be a reflection of the fact that the subordinates were unable to perceive the two dimensions independantly. If this were the case, at least where some subjects are concerned, it would cast some doubt on the claim that the combination of high consideration/high structure is the most 'effective'.

2. HYPOTHESES: BEHAVIOUR MANIPULATION EXPERIMENT

Each subject experienced one of four experimental manipulations of leadership behaviour (see page 190). They were then required to rate the leader's behaviour using a shortened form of one of the Ohio leadership scales (see Section 4 for full details). The subjects perceptions of the leaders actual behaviour constituted the dependent variable.

The following hypotheses were developed, following the line of reasoning described earlier.

- A. Validation hypothesis. Subjects perceptions of the leader's consideration behaviour (as manipulated) will vary significantly depending on the manipulated level of consideration (high or low): mean perceived consideration scores will be higher when manipulation is high consideration than when it is low.
- B. General hypothesis. Subjects perceptions of the leader's consideration behaviour will vary significantly depending on the manipulated level of initiating structure: when the level of manipulated consideration is held constant, mean perceived consideration scores will be significantly higher when the manipulated level of structure is low than when it is high.
- C. Interaction hypothesis. Subjects perceptions of the leader's consideration behaviour will vary significantly depending on the manipulated levels of consideration and initiating structure, and depending on their LPC score. (Test of differentiation argument)
 - :Low and moderate LPC scorers. A main effect of manipulated structure on perceived consideration will be found. (i.e., these subjects will replicate Lowin

et al's results).

High LPC scorers. The manipulation of the leader's initiation of structure will not affect high LPC persons perceptions of the leader's consideration.

- D. Interaction hypothesis: Subjects perceptions of the leader's consideration behaviour will depend on the manipulated level of consideration, on their LPC score, and on their leadership experience.
- E. Interaction hypothesis. Subjects perceptions of the leader's consideration behaviours will depend on the manipulated level of structure, on their LPC score, and on their previous leadership experience (Test of differentiation argument).

Lowin, Hrapchak and Kavanagh (1969) conducted two investigations in which conflicting results were obtained regarding the effects of manipulated consideration on perceived structure. In a behaviour manipulation experiment similar to the one reported in this chapter, subjects perceptions of the leaders structuring behaviours seemed unaffected by the consideration manipulation. However, the results of a different investigation suggested that subjects perceptions of structure were affected by the leaders consideration behaviours.

As was noted by Lowin et al, there seems no obvious logic which would allow one to predict the manner in which the leader's consideration would influence subjects perceptions of the extent to which he initiated structure. For example, would high levels of consideration increase or reduce perceived levels of structure? This question prompted hypothesis G. Hypothesis F was

set up to test the validity of the low/high structure manipulation.

- F. Initiating structure: Validation hypothesis. Subjects perceptions of the leader's initiation of structure (as manipulated) will vary significantly depending on the manipulated level of initiating structure: mean perceived structure scores will be higher when the manipulation is high structure than when it is low.
- G. Initiating structure: General hypothesis. Subjects perceptions of the leader's initiation of structure will vary significantly depending on the manipulated level of consideration.

3. SUBJECTS: BEHAVIOUR MANIPULATION EXPERIMENT

A total of 231 subjects participated in the experiment. 146 were with leadership experience and 85 without.

As in the main study, all the subjects were male 'post experience' students working full-time in industry and local government. Information was not systematically gathered regarding their employment, but occupations included graduate trainees, research engineers, sales directors and works managers.

4. RESEARCH MEASURES: BEHAVIOUR MANIPULATION EXPERIMENT

Subjects LPC and MPC scores were derived from scales identical to those used in the main study (see Appendix C). In addition, a measure was constructed with which to obtain subjects perceptions of the leader's behaviour. This was done by selecting 15 consideration and 8 structure items from the Supervisory Behaviour Description Questionnaire or SBDQ (see Appendix C). The items were selected from those that remained

after the removal of those items used to effect the manipulations of consideration and initiating structure. On the whole the items were factorially 'pure' in that they loaded on only consideration or structure (source of factor loadings: Fleishman et al, 1955). The items were accompanied by a 9-point scale ranging from 'never' (rating = 1) to 'always'. Since some of the items were positively loaded on their factor and some negatively loaded, a response of e.g., 'never' to all the items would not produce the highest possible score. The possible range of scores on the consideration scale was from 15 to 135, the higher the score - the higher the perceived level of consideration. On the structure scale the highest possible score was 72, whilst the lowest was 8. (see Appendix C , page 278 for measure).

5. PROCEDURE: BEHAVIOUR MANIPULATION EXPERIMENT

The subjects who took part in the investigation were attending a course in organisational behaviour as part of their studies. They were given an introduction to the topic of supervisory leadership and were asked to complete copies of the LPC and MPC (see Section 4) as part of a learning exercise. The researcher stressed that none of the questionnaires had 'right' or 'wrong' answers, that they should be completed privately, and that no one need write their name. It was pointed out that they would be asked to return the completed questionnaires so they might be used for research purposes.

The subjects were then given the materials for a role-play exercise "Changing Work Procedures" (Maier, 1952). This involved a foreman and three subordinates discussing the group's method of working. The three men worked a job rotation scheme between them. However, a recent time-study showed that their output would increase if this were abandoned and each worked only

their best position.

Each of the subjects were given all three of the subordinates roles to read (see Appendix C , pages 285 to 287), and told that this would provide them with the background to a job-problem. They were then informed that instead of role-playing the exercise with someone acting the part of the foreman, his response to the situation was recorded on tape. It was explained that their foreman had called them to a meeting, they were to listen carefully to what he had to say but not to take notes.

One of four tapes was then played, each tape being a different combination of high or low initiating structure with high or low consideration. The tapes were approximately the same length and lasted less than five minutes (see Appendix C , pages 282-84).

After the taped manipulation of the foremans behaviour the subjects were asked to describe the way in which he behaved as they saw him. They were given a shortened version of the SBDQ (see page¹²⁵) and told how to complete it. It was explained that some of the items in the SBDQ referred to behaviours which were not expressed in the tape e.g. "He encourages overtime work". When this was the case they were instructed to infer from this other behaviours whether or not he would behave in the manner described.

6. MANIPULATION OF THE LEADERS BEHAVIOUR

The method used by Lowin et al (1969) was employed to effect the manipulation of consideration and initiating structure. This involved writing scripts using items taken from the SBDQ. This method was assumed to result in operational definitions of consideration and structure which conformed closely with those of the Ohio researchers.

Four scripts were constructed by the researcher (low and high consideration, low and high structure) using those items relevant to the "Changing Work Procedures" exercise (ibid). These scripts were then given to two independent judges along with the full version of the SBDQ (Appendix C , page 280 and 281). Working on their own, the judges went through the scripts and indicated which of the SBDQ items they felt each phrase represented. The opinions of the researcher and two judges were then compared and found to be very similar. The Scripts were revised following discussion of those phrases about which there was disagreement.

The validity of the manipulations was further checked by giving two pilot-study samples copies of the scripts. One sample (N=10) received scripts for the low structure/high consideration manipulation. The other sample (N=9) received copies of the high structure/low consideration manipulation. All subjects received a full 48-item version of the SBDQ and followed the procedure described above.

Comparison of the items attributed to the scripts showed that if a script was a manipulation of structure, subjects attributed significantly more structure items to the script than consideration items (Wilcoxon, 1-tailed, $p < .005$) Similarly in the case of the consideration scripts, subjects attributed significantly more consideration items to the scripts than initiating structure items (Wilcoxon, 1-tailed, $p < .005$). These results were taken to indicate that the intended manipulations of consideration and initiating structure were of acceptable validity.

The above tests did not permit an evaluation of the validity of the high/low manipulations of the leader's behaviour. This was because the subjects were only required to indicate which item(s) a given phrase

represented, not whether the phrase was a 'high' or 'low' instance of that item. However some indication of the validity of the high/low manipulations was obtained from subjects self reports. After completing the experiment one of the first groups to be tested was told the four combinations of leader behaviour. They were then asked which they had just heard (low structure/high consideration). After they had stated their beliefs they were played a second tape (high structure/low consideration) and asked the same question. The results are reported in Table 43. Whilst this was by no means a rigorous test, it did provide some 'low-level' support for the claimed manipulation.

7. RESULTS: BEHAVIOUR MANIPULATION EXPERIMENT

Subjects received either a high or low consideration treatment and either a high or low initiating structure treatment. This resulted in a 2 x 2 factorial design, each subject receiving 1 of 4 treatments. The dependant variable was the subjects perceptions of the leaders actual behaviours.

7.1 Hypothesis A: Validity of consideration manipulation

Mean perceived consideration scores were calculated in the high and low consideration conditions. (Table 44).

TABLE 44

EFFECT OF CONSIDERATION MANIPULATIONS ON MEAN PERCEIVED CONSIDERATION

		Perceived Consideration	Sample Size
Low Consideration	\bar{X}	62	103
Manipulation	SD	13	
High Consideration	\bar{X}	89	128
Manipulation	SD	15	

TABLE 43

SUBJECTS VERBAL-REPORTS OF SCRIPT 'TYPE' FOLLOWING RATING THE SCRIPTS
AND BEING TOLD THE FOUR POSSIBLE TYPES

Perceived as being:	SCRIPTS			
	LOW STRUCTURE	HIGH STRUCTURE	LOW CONSIDERATION	HIGH CONSIDERATION
High Structure	1	8	-	-
Low Structure	3	-	-	-
High Consideration	2	-	1	8
Low Consideration	-	-	7	-
None of These*	2	-	-	-

*NOTE: These subjects reported the manipulation as being 'medium' structure. This was a spontaneously offered category.

N = 8

A significant main effect was found for manipulated consideration ($F=203, p<.001$). The subjects perceived the leader to be more considerate when the manipulation was high rather than low. This finding supported the hypothesis (the manipulations were validated) and tests of the remaining hypotheses could be conducted.

7.2 Hypothesis B: Effects of the structure manipulation on subjects perceptions of the leaders consideration.

The level of the structure manipulation (high or low) was found to have a significant effect on subjects perceptions of the leaders consideration behaviours ($F=7.2, p<.01$). When the leader was low on initiating structure, subjects saw him as more considerate than when he was high on initiating structure (see Table 45). This finding replicated the results obtained by Lowin et al (1969) and supported the hypothesis (see page 194).

TABLE 45
EFFECTS OF LEADER'S INITIATING-STRUCTURE BEHAVIOURS ON SUBJECTS PERCEPTIONS OF HIS LEVEL OF CONSIDERATION BEHAVIOUR

		Perceived Consideration	Sample Size
Low Structure	\bar{X}	81	145
Manipulation	SD	20	
High Structure	\bar{X}	69	86
Manipulation	SD	16	

In addition, a significant interaction was found between the manipulations of consideration and initiating structure ($F=5.9, p<.01$). This showed that when the consideration manipulation was high, a higher level of consideration was perceived if structure was low. However, when the

manipulation of consideration was low, the level of the structure manipulation had little effect. (see Table 46 and Figure 28). This finding was not predicted.

TABLE 46
PERCEIVED CONSIDERATION IN EACH OF THE FOUR EXPERIMENTAL CONDITIONS

	MEAN PERCEIVED CONSIDERATION			
	High Consideration		Low Consideration	
	Hi St	Lo St	Hi St	Lo St
\bar{X}	79	92	63	60
SD	14	14	15	12
N	34	94	52	51

7.3 Hypothesis C: Subjects perceptions of the leaders consideration will depend on an interaction between the consideration and structure manipulations and the size of the subjects LPC score.

The mean perceived consideration scores within each condition were calculated for low, moderate and high LPC scorers (Table 47) ($F=.002$, $p=ns$)

TABLE 47
MEAN PERCEIVED CONSIDERATION IN EACH OF THE FOUR EXPERIMENTAL CONDITIONS

		PERCEIVED CONSIDERATION			
		High Consideration		Low Consideration	
		Hi St	Lo St	Hi St	Lo St
LOW LPC	\bar{X}	77	87	64	55
	SD	15.2	14.5	16.0	5.6
	N	14	28	17	14
MODERATE LPC	\bar{X}	78	94	59	63
	SD	12.2	12.5	13.6	12.0
	N	14	45	24	30
HIGH LPC	\bar{X}	84	94	71	59
	SD	16.5	13.5	12.4	13.7
	N	6	21	11	7

FIGURE 28

MEAN PERCEIVED CONSIDERATION IN THE FOUR EXPERIMENTAL CONDITIONS

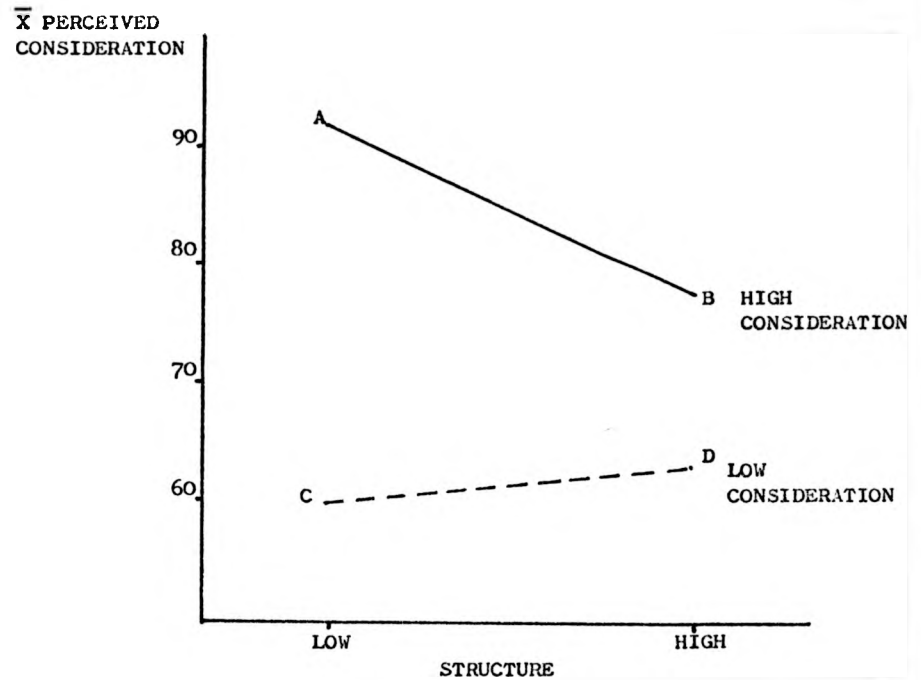


TABLE 48

STATISTICAL COMPARISONS OF MEAN PERCEIVED CONSIDERATION

SCORES IN FIGURE 30

	A	D
B	ns	ns
C	$p < .01$	ns

A = High Consideration/High Structure
 B = High Consideration/Low Structure
 C = Low Consideration/High Structure
 D = Low Consideration/Low Structure

Inspection of the data suggested that low and high LPC scorers were similar, but different from moderate LPC scorers (see Figure 29). However the F value was not significant ($F=.002$, $p=ns$) and hypothesis C was not supported.

It should be noted that subjects perceptions of the overall level of the leaders consideration behaviours differed with their LPC score. This main effect was not predicted ($F=4.8$, $p<.01$). Examination of the cell means revealed that high LPC persons perceived higher levels of consideration whatever the manipulation (Table 49).

TABLE 49
SUBJECTS PERCEPTIONS OF THE MANIPULATIONS OF THE LEADER'S CONSIDERATION
BEHAVIOURS

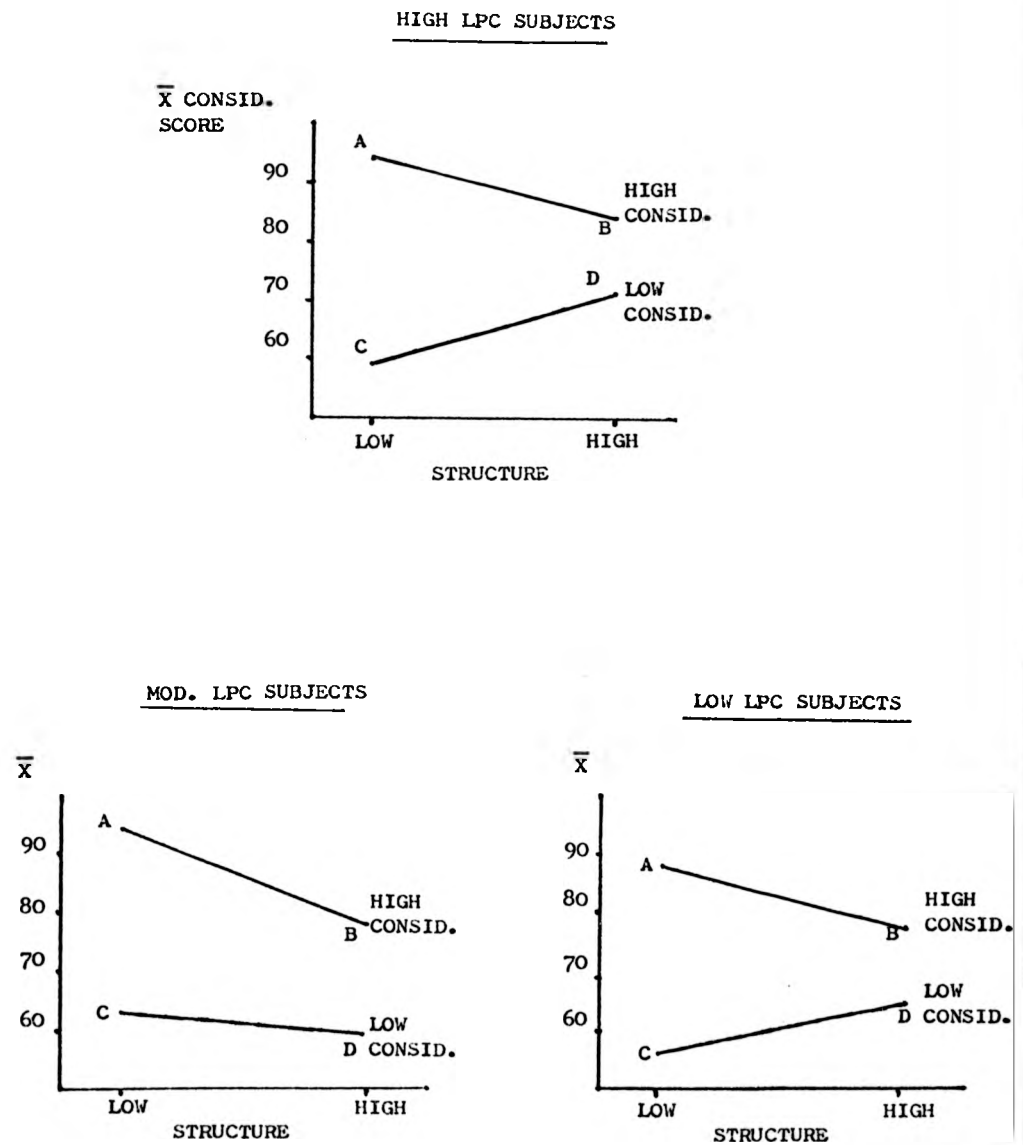
		Perceived Consideration	N
LOW LPC	\bar{X}	73	73
	SD	18.6	
MOD LPC	\bar{X}	77	113
	SD	19.9	
HIGH LPC	\bar{X}	82	45
	SD	18.9	
TOTAL \bar{X}		77	231
SD		19.5	

7.4 Hypothesis D: Subjects perceptions of the leader's consideration behaviour will depend on the manipulated level of consideration, on their LPC score and on their leadership experience.

As was hypothesized, a significant 3-way interaction was found between

FIGURE 29

SUBJECTS PERCEPTIONS OF THE LEADER'S CONSIDERATION BEHAVIOURS



Scheffé results: A-C = $p < .01$

Scheffé results: A-C = $p < .01$

the manipulations of consideration, the subjects LPC score and leadership experience, ($F=9.5$, $p<.001$). The cell means are presented in Table 50 and displayed in Figure 30.

Descriptively:

When the manipulation of consideration was low, moderate and low LPC persons, with experience perceived a lower level of consideration than those without experience. The reverse effect was found for high LPC scorers. However, when the manipulation of consideration was high, high and low LPC persons were more alike: those with experience perceived a lower level of consideration than those without. In contrast, the moderate LPC scorers who had experience perceived a higher level of consideration than those without. However, only the difference between the moderate LPC persons/with experience in the low and high consideration conditions was significant (Scheffe, $p<.01$)

7.5 Hypothesis E: Subjects perceptions of the leaders consideration behaviour will depend on the manipulated level of structure, on their LPC score and on their leadership experience.

Subjects perceptions of the leader's consideration behaviours were influenced by the 3-way interaction described above ($F=4.5$, $p<.05$). The nature of this interaction was revealed by examining the mean perceived consideration scores in each of the twelve cells of the design (see Table 51, Figure 31).

Descriptively:

When the manipulation was low structure, high and low LPC persons, with experience perceived a lower level of consideration than those without experience. The reverse effect was found for moderate LPC scorers. However, when the structure manipulation was high, moderate and low LPC persons were more alike: those with experience perceived less consideration than those without. The reverse was true of high LPC scorers. Of the six sub-samples, only the moderate LPC persons, with leadership experience perceived a significant variation in the level of the leader's consideration in the low and high structure conditions (Scheffe $p<.05$)

TABLE 50

SUBJECTS PERCEPTIONS OF THE LEADERS CONSIDERATION BEHAVIOURS AS INFLUENCED
BY THE MANIPULATION OF LEADER BEHAVIOUR (HIGH OR LOW CONSIDERATION), PREVIOUS
LEADERSHIP EXPERIENCE, AND SIZE OF LPC SCORE

		WITH EXPERIENCE		NO EXPERIENCE	
		LOW CON.	HIGH CON.	LOW CON.	HIGH CON.
LOW LPC	\bar{X}	59	79	61	91
	SD	16.5	14	8.8	15.3
	N	16	27	15	15
MOD. LPC	\bar{X}	59	93	64	83
	SD	13.9	13.2	11.5	14.5
	N	28	44	26	15
HIGH LPC	\bar{X}	67	90	64	96
	SD	14.9	15.5	12.6	11.6
	N	12	19	6	8
N =		56	90	47	38

TABLE 51

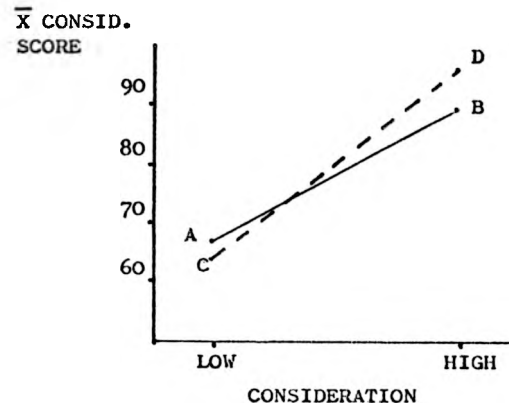
SUBJECTS PERCEPTIONS OF THE LEADER'S CONSIDERATION BEHAVIOURS AS INFLUENCED
BY THE MANIPULATION OF LEADER BEHAVIOUR (HIGH OR LOW STRUCTURE) PREVIOUS
LEADERSHIP EXPERIENCE AND SIZE OF LPC SCORE.

		WITH EXPERIENCE		NO EXPERIENCE	
		LOW STRUCTURE	HIGH STRUCTURE	LOW STRUCTURE	HIGH STRUCTURE
LOW LPC	\bar{X}	75	67	77	74
	SD	18.5	16.6	21.6	16.7
	N	24	19	18	12
MOD. LPC	\bar{X}	87	65	73	68
	SD	19.5	18.0	16.7	12.8
	N	49	23	26	15
HIGH LPC	\bar{X}	85	76	87	75
	SD	20.5	14.7	21.3	17.0
	N	19	12	9	5

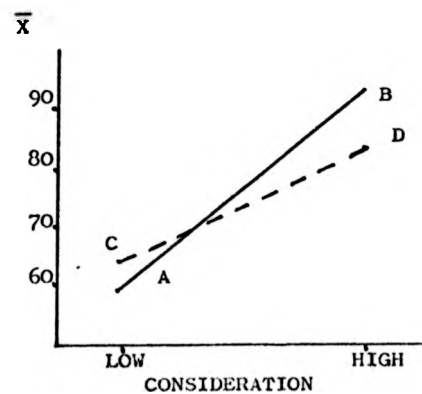
FIGURE 30

SUBJECT'S PERCEPTIONS OF THE LEADERS CONSIDERATION BEHAVIOURS AS INFLUENCED
BY THE MANIPULATION OF LEADER BEHAVIOUR (HIGH OR LOW CONSIDERATION), PREVIOUS
LEADERSHIP EXPERIENCE AND SIZE OF LPC SCORE

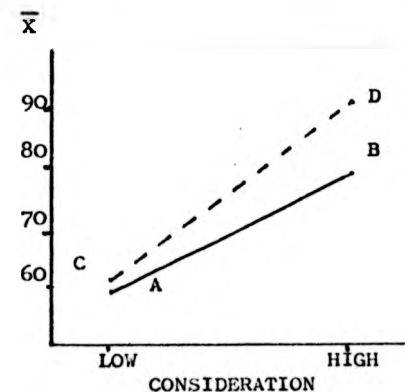
HIGH LPC SUBJECTS



MOD. LPC SUBJECTS



LOW LPC SUBJECTS



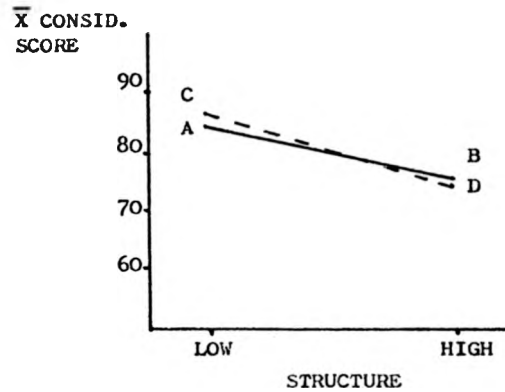
Scheffé results: A-B = $p < .01$

LEGEND: Solid line = with experience; broken line = without experience.

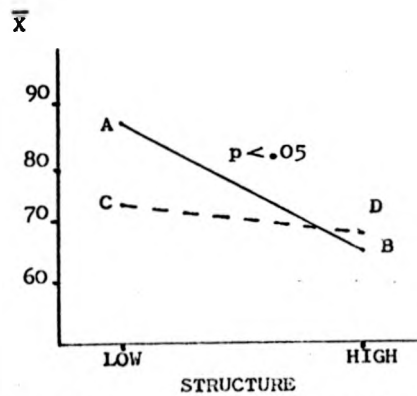
FIGURE 31

SUBJECTS PERCEPTIONS OF THE LEADERS CONSIDERATION BEHAVIOURS AS INFLUENCED
BY THE MANIPULATION OF LEADER BEHAVIOUR (HIGH OR LOW STRUCTURE), LEADERSHIP
EXPERIENCE AND SIZE OF LPC SCORE

HIGH LPC SUBJECTS

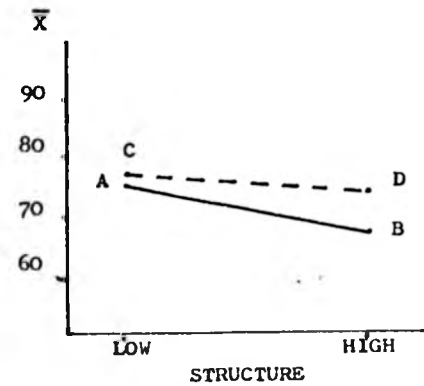


MOD. LPC SUBJECTS



Scheffé results: A-B = $p < .05$

LOW LPC SUBJECTS



LEGEND: Solid line = with experience; Broken line = without experience.

7.6 Hypothesis F: Validity of Structure manipulations

Mean perceived structure scores were calculated in each of the experimental conditions (Table 52).

TABLE 52

EFFECT OF STRUCTURE MANIPULATIONS ON MEAN PERCEIVED STRUCTURE

	PERCEIVED STRUCTURE	
	LOW STRUCTURE MANIP	HIGH STRUCTURE MANIP
\bar{X}	36	42
SD	8.3	9.0
N	145	86

The results showed that the mean perceived structure scores were higher when the manipulation was high structure than when it was low. The analysis of variance showed a significant main effect for the effects of manipulated structure on perceived structure ($F=36, p<.001$). These data supported the hypothesis and therefore validated the intended manipulations of low and high initiating structure.

7.7 Hypothesis G: Effects of manipulated consideration on perceived initiating structure.

Lowin et al reported:-

"It would appear that the supervisor's behaviour relevant to consideration does not affect the subordinates perception of his supervisor's level of initiating structure". (page 241)

In this experiment, the manipulation of the leader's consideration behaviours was found to have a significant effect on the subjects perceptions of the leaders initiation of structure ($F=18.6, p<.001$). When

the leader was high on consideration, subjects perceived him as initiating more structure (Table 53).

TABLE 53
EFFECTS OF THE LEADER'S CONSIDERATION BEHAVIOURS ON SUBJECTS PERCEPTIONS OF
HIS LEVEL OF INITIATING STRUCTURE

		Mean Perceived Structure Scores
Low Consideration	\bar{X}	37
	SD	9.1
	N	103
High Consideration	\bar{X}	40
	SD	8.7
	N	128

7.8 Relationships between the variables and their effects on the subjects
perceptions of the leaders initiation of structure

As has already been noted, subjects perceptions of the leaders initiation of structure depended upon both the consideration and structure manipulations. However, no other significant main effect or interaction was obtained. It therefore seemed that unlike their perceptions of the leaders consideration behaviours, their perceptions of his initiation of structure were unaffected by whether or not they had leadership experience (although the effect of this variable was nearly significant: $p < .06$), by the size of their LPC score, or by interactions between any of the independent variables.

8. DISCUSSION OF RESULTS

Lowin, Hrapchak and Kavanagh (1969) reported an experiment in which they independently manipulated the LBDQ dimensions of consideration and initiating-structure. Whilst they found their manipulations of structure influenced subjects perceptions of the leaders consideration, the consideration manipulations did not appear to influence perceptions of the leaders structuring behaviour. In the same article they reported data from a different investigation / which contradicted the latter findings i.e., the subjects perceptions of the leader's initiation of structure were influenced by the manipulations of consideration. In their own words:-

the hypothesis that initiating structure affects consideration, but that consideration does not affect perceived initiating-structure requires further attention. Lowin et al, page 252.

The experiment reported in this Chapter was designed to replicate Lowin et al's study and to clarify their conflicting findings. The results of such an experiment were seen to be important to the debate regarding relationships between consideration and initiating-structure, and the relationship between these dimensions and effectiveness. More importantly, such an experiment provided the means to investigate further the meaning of LPC scores. The differentiation interpretation of LPC scores suggested that high LPC persons would perceive consideration and initiating-structure as independent, whereas the low and moderate LPC persons would see them as correlated and would therefore replicate Lowin et al's findings.

The results obtained in this experiment are summarised in Table 65.

8.1 Replication of Lowin et al (1969)

The results showed subjects perceptions of the leader's consideration

TABLE 65

BEHAVIOUR MANIPULATION EXPERIMENT: SUMMARY OF THE RESULTS OF
HYPOTHESIS-TESTING

HYPOTHESISRESULTS AND SIGNIFICANCEDependent variable = Perceived consideration

- A Consideration was perceived to be highest when the manipulation was high consideration (Supportive, $p < .001$).
- B Consideration was perceived to be higher when the manipulation of structure was low than when it was high (Supportive, $p < .01$).
- Consideration was perceived to be highest when the manipulation was high consideration/low structure. When the manipulation of consideration was low, the manipulation of structure had little effect (not predicted, $p < .01$).
- C High, moderate and low LPC scorers did not differ significantly from each other in their perceptions of the leader's consideration in the four experimental conditions (Failed to support the differentiation hypothesis).
- D Subjects perceptions of the leader's consideration depended on the manipulated level of consideration, their LPC score and their leadership experience. The effect of the low/high consideration manipulation was most marked in the case of moderate LPC scorers, with leadership experience. (Supportive, $p < .01$. Form of interaction contrary to prediction).
- E Subjects perceptions of the leader's consideration depended on the manipulated level of structure, their LPC score and their leadership experience. The effect of the low/high structure manipulation was most marked in the case of moderate LPC scorers, with leadership experience. (Supportive, $p < .05$. Form of interaction contrary to prediction).

Dependent variable = Perceived structure

- F Initiating structure was perceived to be higher when the manipulation was high structure. (Supportive $p < .001$).
- G. Initiating structure was perceived to be higher when the manipulation of consideration was high than when it was low. (Supportive, $p < .001$. Direction of effect not predicted).

TABLE 65

BEHAVIOUR MANIPULATION EXPERIMENT: SUMMARY OF THE RESULTS OF
HYPOTHESIS-TESTING

HYPOTHESISRESULTS AND SIGNIFICANCEDependent variable = Perceived consideration

- A Consideration was perceived to be highest when the manipulation was high consideration (Supportive, $p < .001$).
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- Consideration was perceived to be highest when the manipulation was high consideration/low structure. When the manipulation of consideration was low, the manipulation of structure had little effect (not predicted, $p < .01$).
- C High, moderate and low LPC scorers did not differ significantly from each other in their perceptions of the leader's consideration in the four experimental conditions (Failed to support the differentiation hypothesis).
- D Subjects perceptions of the leader's consideration depended on the manipulated level of consideration, their LPC score and their leadership experience. The effect of the low/high consideration manipulation was most marked in the case of moderate LPC scorers, with leadership experience. (Supportive, $p < .01$. Form of interaction contrary to prediction).
- E Subjects perceptions of the leader's consideration depended on the manipulated level of structure, their LPC score and their leadership experience. The effect of the low/high structure manipulation was most marked in the case of moderate LPC scorers, with leadership experience. (Supportive, $p < .05$. Form of interaction contrary to prediction).

Dependent variable = Perceived structure

- F Initiating structure was perceived to be higher when the manipulation was high structure. (Supportive $p < .001$).
- G. Initiating structure was perceived to be higher when the manipulation of consideration was high than when it was low. (Supportive, $p < .001$. Direction of effect not predicted).

to be influenced by the level of the structure manipulation (hypothesis B). More precisely, the leader was seen to be more considerate when the manipulation was high consideration/low structure, than when the leader was high on both dimensions (see Figure 28). These findings replicated those obtained by Lowin et al.

The subjects perceptions of the leader's structuring behaviour were influenced by the consideration manipulations (hypothesis G). The leader was perceived to initiate more structure when the manipulated level of consideration was high rather than low. This result clarified the conflicting findings obtained by Lowin and his colleagues (see page 192).

When taken together, these findings indicate that consideration and initiating-structure are not perceived as independent dimensions of leadership behaviour: the extent to which a leader is considerate towards his subordinates influences the degree to which he is perceived as high on initiating-structure and vice versa.

8.2 Differentiation interpretation of LPC Scores

It was argued that low and moderate LPC subjects would replicate Lowin et al's findings, whilst high LPC persons would not. A test of hypothesis C (see page 191) failed to support this interpretation ($F = .002$, $p = ns$).

In other words, whether a subject has a high, moderate or low LPC score seemed to have little effect on their perceptions of the relationships between consideration and initiating structure (see Figure 29)

The results of the main study (Chapter 7) suggested that leadership experience influenced the meaning of LPC scores. For this reason, the differentiation interpretation was also tested taking into account the leadership experience of the subject (hypothesis E). Again it was predicted that high LPC persons would differ from moderate and low LPC scorers, in that their perceptions of the leader's consideration would be unaffected by the structure manipulations. The precise effects of experience were not predicted (see page 192).

Whilst a significant interaction between these variables was found ($F=4.5$, $p<.05$), the form of the interaction was not as implied by the differentiation argument (see Figure 31). The high and low LPC subjects, regardless of their leadership experience, seemed little affected by the level of the structure manipulation. This also seemed true of the moderate LPC subjects, without leadership experience. In contrast, the moderate LPC persons, with leadership experience, perceived a significant difference in the level of the leader's consideration depending on whether the manipulation of structure was high or low. The differentiation interpretation of these results is that the moderate LPC scorers, with leadership experience, failed to differentiate between consideration and initiating-structure whilst the other subjects did differentiate.

These findings have two major implications:-

- (a) High and low LPC scores do not reflect differences in the degree to which subjects differentiate between consideration and initiating-structure behaviours. This in turn casts doubt on the validity of the differentiation interpretation of LPC scores.

- (b) Lowin et al's data showing the effects of manipulated structure on perceived consideration were only replicated by the moderate LPC persons, with leadership experience. This seems suprising since Lowin et al's subjects, being students, would probably have had no experience in a leadership position.

8.3 LPC scores and leadership experience

It was hypothesized that subjects perceptions of the leader's consideration would be influenced by 3-way interactions between manipulated consideration, LPC and experience (hypothesis D; see page 192), and between manipulated structure, LPC and experience hypothesis E; see page 192). Both interactions were found to be statistically significant (see pages 200 - 201). Like the results of the main study, these data were taken to imply that the meaning of a persons LPC score depends on an interaction between two factors: the size of their score and their leadership experience.

This conclusion should perhaps be moderated in view of the failure to find significant interactions between experience and other variables when structure was the dependant variable (see page 203). However, such findings were not predicted due to conflicting results regarding the effects of manipulated consideration on perceived structure (see page 192), plus the fact that it was not obvious why the consideration manipulations should influence subjects perceptions of the leader's structuring behaviour (see page 192). Furthermore, it was found that the subjects perceptions of the high and low structure manipulations, whilst significantly different, were not as different as intended (difference = 6 scale points, see page 202).

This would have reduced the likelihood of obtaining significant interactions.

8.4 Individual differences in subjects perceptions of the relationship between consideration and initiating-structure

The main effects discussed in Section 8.1 indicated that the degree to which a leader initiated-structure influenced subjects perceptions of the extent to which he was considerate. In other words, consideration and initiating structure were correlated. Whilst this was true of the total sample, the observed interaction between manipulated structure, LPC and experience (hypothesis E, see page 192) showed it was necessary to qualify this conclusion. Low and high LPC subjects, and moderate LPC persons/without leadership experience seemed to perceive the consideration and initiating-structure dimensions as independent. This suggests that where these subjects are concerned, a leader may adopt a very structuring style of behaviour and still be seen as highly considerate. It is possible that such a style would be the 'most effective' (see page 190). However, the same set of leadership behaviours will be perceived differently by moderate LPC persons who have had leadership experience.

These results suggest that the 'most effective' combination of consideration and structuring behaviours will vary, depending on the LPC scores and leadership experience of a leader's group-members. This conclusion is of significance to any model such as Fiedler's which attempts to deal with a wide variety of groups. For example, of the studies from which Fiedler's model was induced, one involved boards of directors - all of whom presumably had leadership experience (Godfrey, Fiedler and Hall, 1959), and another concerned foreman whose

work-groups seemed to include lower levels of management (Cleven and Fiedler, 1956).

The general implication of these results is that the type of group-members a leader has to 'direct and co-ordinate' constitutes an important 'situational' factor. Whilst this has been suggested by contingency theorists (e.g. Tannenbaum and Schmidt, 1958; Reddin, 1970), few have attempted to identify empirically the traits involved.

It also seems likely that the nature of the task a work-group has to perform will render different combinations of consideration and initiating-structure more or less effective (Lowin et al, 1969). This being the case, it seems somewhat futile to investigate, in vacuo, the one most effective combination of behaviours. The effectiveness of different combinations of consideration and initiating-structure will depend on various aspects of the situation in which the leader is working, including the type of subordinates with whom he is dealing.

8.5 General comments on the definitions of consideration and initiating structure.

Lowin and his colleagues commented that:-

"It was readily apparent to those preparing the scripts that the concept of consideration was well elaborated, ... whereas the concept of initiating structure remained most ambiguous, for there occurred here much unresolved disagreement as to pure positive and negative instances of consideration-independent structuring". page 244.

The experience of this researcher was very similar. The purpose of the experiment required that the manipulation of initiating-structure be independant of the consideration manipulations. Consideration-

independant items of structure were also required for the scale used to rate the manipulations. These were hard to find. In the event, only eight structure items (compared with 15 consideration) were included in the post-manipulation questionnaire.

These observations suggest that the concept of 'initiating-structure', when operationalised in the ~~SSDQ~~ LBDQ (Fleishman, 1972) is not distinct from that of consideration. Furthermore, it appears to include a number of different elements e.g. punitive behaviour, restriction of individuals behaviour, encouragement of more effort etc. (Schriesheim, House and Kerr, 1976). Some of which seem a priori to indicate low consideration. This seems less of a problem with the LBDQ and the revised LBDQ which are also claimed to measure consideration and initiating structure (Schriesheim et al, 1976).

If it is conceptually desirable that the dimensions of consideration and initiating-structure be measured independently, the results of the experiment reported in this chapter offer some hope. When factorially 'pure' structure items were manipulated, certain subjects (depending on their LPC score and leadership experience) perceptions of the leader's consideration behaviour seemed relatively unaffected (i.e. the low/high structure manipulation did not have a statistically significant effect on perceived consideration). However, having said this, it should be repeated that other subjects observing the same manipulations perceived significantly lower levels of consideration when structure was high.

These results suggest that future investigations of the relationship between consideration and initiating structure should take

into account both the scale employed (SBDQ, LBDQ or revised LBDQ) and the nature of the subjects concerned (their LPC score and leadership experience).

8.6 Conclusions: LPC scores, leadership experience and perceptions of leader behaviour

The results obtained in this experiment can be summarised very briefly.

- (a) The subjects did not necessarily perceive consideration and initiating-structure as independent dimensions of leader behaviour: the level of the leader's structuring behaviours influenced subject's perceptions of the degree to which he was considerate and vice versa. (Replication of Lowin et al, 1969).
- (b) Whether or not subjects perceived the consideration and initiating-structure manipulations independently depended on both the size of their LPC score and whether or not they had leadership experience (i.e. an interaction effect).
- (c) The precise nature of the relationships between LPC scores, leadership experience and subjects' perceptions of the leaders behaviour were extremely complex. These relationships were not as predicted, nor were they readily interpreted in terms of cognitive differentiation.

These findings suggested the following conclusions:-

- (a) A leader who employs a given style of behaviour will be perceived in a variety of ways depending on the LPC score and previous leadership experience of his group members;
- (b) this renders the term 'high' consideration or 'high' structure meaningless unless it is specified 'high' as

perceived by whom, and the scores quoted.

- (c) This in turn suggests that the most 'effective' combination of consideration and structuring behaviours will vary depending on the types of persons with whom a leader is working. It may be that the leader's job will be made 'easier' if his work-group is homogeneous in size of LPC score and previous leadership experience.
- (d) The differentiation interpretation of LPC scores does not provide a satisfactory explanation of the results of this experiment.

perceived by whom, and the scores quoted.

- (c) This in turn suggests that the most 'effective' combination of consideration and structuring behaviours will vary depending on the types of persons with whom a leader is working. It may be that the leader's job will be made 'easier' if his work-group is homogeneous in size of LPC score and previous leadership experience.
- (d) The differentiation interpretation of LPC scores does not provide a satisfactory explanation of the results of this experiment.

CHAPTER 9

LPC, ASO AND COGNITIVE DIFFERENTIATION: REPLICATION OF MAIN STUDY

1. INTRODUCTION

In addition to the 'behaviour manipulation' experiment, it was decided to collect the same data as were obtained in the main study (Chapter 7).

This was thought to be worthwhile for two reasons:

- (a) The main study sample (N=94) was stratified into six sub-samples. Within each of the sub-samples, correlations were computed to ascertain the degree of association between the variables. Whilst many of the correlations were significant, the fact that they were based on small sample-sizes (range : N=8 to N=24) meant that the confidence limits were large. This being the case, replication with a larger sample seemed desirable.
- (b) Replication also seemed desirable in view of the complexity of the findings reported in the main study, plus the fact that they were neither predicted, nor predictable. Since these results were taken to have significant implications (see page 185), it seemed important to assess their reliability.

2. HYPOTHESES

As in the main study, hypotheses I to IV were tested on subjects with leadership experience.

- I High LPC/high differentiation. High LPC persons will score lower on measures of intrapersonal and interpersonal differentiation (i.e. are high differentiators) than will low LPC persons.
- II High LPC/ASo. High LPC persons will obtain lower D scores than low LPC persons (low D scores=high ASo).
- III High ASo/high differentiation. Low D scorers will score lower on

measures of intrapersonal and interpersonal differentiation than will high D scorers.

- IV High LPC/high task-interpersonal differentiation. High LPC scorers will obtain lower correlations between task-related and interpersonal-related item-sets of the LPC scale than will low LPC scorers.

Whilst no hypotheses were developed for the subjects without leadership experience, it was conjectured that the relationships would differ from those observed in the with experience sample. This conformed with the practice employed in the main study (see page 169).

3. SUBJECTS

247 subjects provided the survey research data. These included the subjects who completed the behaviour manipulation experiment. 158 of the subjects had leadership experience whilst 89 had none.

4. RESEARCH MEASURES AND PROCEDURE

The measures were identical to those employed in the main study (see Chapter 7, page 169). Subjects completed them prior to performing the behaviour manipulation experiment.

5. RESULTS : SUBJECTS WITH LEADERSHIP EXPERIENCE

The mean scores and standard deviations of the 'with experience' subjects are presented in Tables 55 and 56. Whilst there was little difference between these values and those obtained in the main study, the interpersonal differentiation scores were more widely distributed about the mean (SD=33, Main Study SD=25).

TABLE 55

INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION:
MEANS AND STANDARD DEVIATIONS OF SCORES

	INTRA	INTER
\bar{X}	124	111
SD	24	33

N=155

TABLE 56

COWORKER SCALES: MEANS AND STANDARD
DEVIATIONS OF SCORES

	LPC	MPC	ASO
\bar{X}	61	103	14.0
SD	15	10	3.9

N=158

The following pages contain a detailed description of the relationships observed between the measures. A broad, summary description of these findings (mainly non-significant) is presented on page 223.

5.1 Results: Hypothesis I (see page 213)

As in the main study, small correlations were obtained between LPC and intrapersonal differentiation, and LPC and interpersonal differentiation. Neither differed significantly from zero (Table 57).

TABLE 57

CORRELATIONS: THE COWORKER SCALES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION

	LPC	D	INTRA	INTER
MPC	-.19	+.34	-.10	-.02
LPC		-.75***	-.08	+.20
D			-.10	-.28
INTRA				-.56***

***: $p < .001$

N = 158 (NB: Correlations involving intra and inter are based on an N of 155)

These results, like those obtained in the main study, failed to support the hypothesis.

Relationships between LPC and other variables have been found to differ depending on the size of the subjects LPC score (see Chapter 6). In view of these findings, the sample was stratified into high, moderate and low LPC groups. Relationships between the variables were examined in each of the subsamples and found to be small and unreliable (Table 57). As in the main study, hypothesis I was not supported. Furthermore, the results failed to suggest that LPC scores of different size reflect different attributes.

TABLE 58

RELATIONSHIPS BETWEEN THE MEASURES: WITH EXPERIENCE SAMPLE

	LOW LPC	MODERATE LPC	HIGH LPC
LPC AND D	-.65***	-.49***	-.16
INTER AND INTRA	+.47***	+.37***	+.58***
INTER AND LPC	-.14	+.09	-.02
INTER AND D	-.15	-.21*	-.26
INTRA AND LPC	-.34*	-.04	+.05
INTRA AND D	-.07	-.21*	-.26
TASK AND SOCIAL	-.11	-.59***	-.29*
	N=44	N=82	N=32 ⁺

* p < .05

** p < .005

*** p < .001

+ Correlations involving Intra and Inter are based on an N of 31

5.2 Results: Hypothesis II (see page 213)

A correlation of -.75 was obtained between LPC and D, showing them to share a little more than half the variance (Table 57). The value of this statistic compared favourably with Fiedler's norms' (Fiedler, 1967 page 44), and was larger than the main study result (-.58).

When the sample was stratified, the results obtained in the low and moderate LPC samples continued to support the hypothesis (Table 58). However a small, non-significant correlation was obtained by the high LPC scorers. This result replicated that obtained in the main study, and suggested that, where high LPC scorers are concerned, LPC and ASo are not interchangeable.

5.3 Results: Hypothesis III (see page 213)

A correlation of -.28 was obtained between D(ASo) and interpersonal

TABLE 58

RELATIONSHIPS BETWEEN THE MEASURES: WITH EXPERIENCE SAMPLE

	LOW LPC	MODERATE LPC	HIGH LPC
LPC AND D	-.65***	-.49***	-.16
INTER AND INTRA	+.47***	+.37***	+.58***
INTER AND LPC	-.14	+.09	-.02
INTER AND D	-.15	-.21*	-.26
INTRA AND LPC	-.34*	-.04	+.05
INTRA AND D	-.07	-.21*	-.26
TASK AND SOCIAL	-.11	-.59***	-.29*
	N=44	N=82	N=32 ⁺

* p < .05

** p < .005

*** p < .001

+ Correlations involving Intra and Inter are based on an N of 31

5.2 Results: Hypothesis II (see page 113)

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When the sample was stratified, the results obtained in the low and moderate LPC samples continued to support the hypothesis (Table 58). However a small, non-significant correlation was obtained by the high LPC scorers. This result replicated that obtained in the main study, and suggested that, where high LPC scorers are concerned, LPC and ASo are not interchangeable.

5.3 Results: Hypothesis III (see page 213)

A correlation of -.28 was obtained between D(ASo) and interpersonal

differentiation, whilst the correlation between D and intrapersonal differentiation was $+.10$. Neither differed significantly from zero. As in the main study, these results failed to support the hypothesis.

Stratifying the total sample into low, moderate and high LPC groups revealed few significant relationships. Only two of the six correlations were significant (Table 58), both of these being in the moderate LPC subsample (-21 , -21 , $p < .05$).

With the exception of the correlations between differentiation and D scores in the moderate LPC sample, these results failed to replicate those obtained in the main study. In consequence they failed to show systematic relationships between D scores (ASo) and the types of differentiation studied.

5.4 Results: Hypothesis IV (see page 194)

The LPC scale consists of task-related and interpersonal-related adjectives (see page 8). In the investigations reported in Chapters 6 and 7, these items were defined on the basis of information from principal components analyses, this being in accord with the usual practice. However in Chapter 7 it was argued that items from the LPC scale should be defined a priori as task or interpersonal-related, (see page 183). The items were so defined (see page 184 for the list of items), and a task and interpersonal score derived for each subject.

When the scores for all subjects with leadership experience were correlated a coefficient of $+.16$ was obtained (ns). This was similar to the value obtained in the main study ($-.19$).

Relationships between the variables were examined in each of the sub-

samples. The correlations were found to be $-.11$ (Low LPC), $-.59$ (Moderate LPC) and $-.29$ (High LPC). Only the correlation in the moderate LPC sample was significant ($p < .005$). These results differed from those in the main study where sizeable negative correlations were obtained in each of the sub-samples. However, the results were not directly comparable since different definitions of task and interpersonal items were employed.

As in the main study, these results failed to support the hypothesis. They showed no differences between high and low LPC leaders in their ability to differentiate between the task and interpersonal aspects of a person.

6. COMPARISON BETWEEN WITH AND WITHOUT-EXPERIENCE SUBJECTS

Tables 59 and 60 contain the means and standard deviations of the without-experience subjects scores. The values of these statistics were similar to those found in the with-experience sample (see Tables 55 and 56, page 215).

TABLE 59

INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION: MEANS AND STANDARD

DEVIATIONS OF SCORES: WITHOUT EXPERIENCE SAMPLE

	INTRA	INTER
\bar{X}	128	112
SD	28	29

N=88

TABLE 60

COWORKER SCALES: MEANS AND STANDARD DEVIATIONS OF SCORES: WITHOUT-EXPERIENCE

SAMPLE

	LPC	MPC	ASo
\bar{X}	59 ⁺	100	14.0
SD	15	12	4.6

N=88

+ N=89

The distributions of scores were also similar to those obtained in the main study samples (see page 170 and 175, Tables 28 and 35).

As in the main study, the data obtained from the with and without leadership experience samples were compared as a whole. This was to see if leadership experience moderated the relationships between the variables (see Chapter 7, page 170).

These samples were then stratified into low, moderate and high LPC sub-samples. Relationships between the variables were examined in comparable sub-samples. This was done in order to further examine the influence of size of LPC score and previous experience as a leader on the relationships between the variables.

6.1 Total sample comparisons

In the main study, LPC and D (ASo) were found to be more strongly associated in the 'without experience' sample ($p < .02$). This finding was not replicated: both correlations were substantial ($> .7$) and negative (Tables 57 and 61).

TABLE 61

CORRELATIONS: THE COWORKER SCALES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION (WITHOUT EXPERIENCE SAMPLE)

	LPC	D	INTRA	INTER
MPC	-.27	+.68***	-.21 ⁺	-.26 ⁺
LPC		-.72***	-.01	+.13
D			-.28 ⁺	-.30 ⁺
INTRA				+.70***

*** $p < .001$

N=88

+ N=87

See Table 57 , page 216 for data from with experience sample.

The one relationship which did appear to be moderated by leadership experience was that between intrapersonal differentiation and interpersonal differentiation. In the 'without experience' sample the correlation was +.70 ($p < .001$) whilst in the 'with experience' sample it was -.56 ($p < .001$). These correlations differed significantly from each other ($Z=1.73$ $p < .05$). This result replicated the main study findings inasmuch as the two correlations differed significantly, the degree of association in the 'without experience' sample being larger. However they differed in one respect from the findings of the main study in that the correlation in the 'with experience' sample was negative (-.56) whilst in the main study it was positive (+.39).

On the whole these results suggested that leadership experience did not moderate the relationships between the variables.

6.2 Stratified sample comparisons

The results of the main study suggested that the observed moderator

TABLE 61

CORRELATIONS: THE COWORKER SCALES, INTRAPERSONAL AND INTERPERSONAL DIFFERENTIATION (WITHOUT EXPERIENCE SAMPLE)

	LPC	D	INTRA	INTER
MPC	-.27	+.68***	-.21 ⁺	-.26 ⁺
LPC		-.72***	-.01	+.13
D			-.28 ⁺	-.30 ⁺
INTRA				+.70***

*** $p < .001$

N=88

+ N=87

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The one relationship which did appear to be moderated by leadership experience was that between intrapersonal differentiation and interpersonal differentiation. In the 'without experience' sample the correlation was $+.70$ ($p < .001$) whilst in the 'with experience' sample it was $-.56$ ($p < .001$). These correlations differed significantly from each other ($Z=1.73$ $p < .05$). This result replicated the main study findings inasmuch as the two correlations differed significantly, the degree of association in the 'without experience' sample being larger. However they differed in one respect from the findings of the main study in that the correlation in the 'with experience' sample was negative ($-.56$) whilst in the main study it was positive ($+.39$).

On the whole these results suggested that leadership experience did not moderate the relationships between the variables.

6.2 Stratified sample comparisons

The results of the main study suggested that the observed moderator

effects of leadership experience, varied with the size of the individual's LPC score (page 176). In order to see if this finding replicated, comparisons were made between those subjects having the same size LPC score but differing leadership experience.

Table 62 shows the relevant data for the without experience subjects. The results for the experienced subjects are to be found in Table 58 (page 217).

TABLE 61

RELATIONSHIPS BETWEEN THE MEASURES: WITHOUT EXPERIENCE SAMPLE

	LOW LPC	MODERATE LPC	HIGH LPC
LPC AND D	-.77***	-.38**	+.21
INTER AND INTRA	+.55***	+.78***	+.86***
INTER AND LPC	+.36	+.16	+.39
INTER AND D	-.42*	-.30*	-.46*
INTRA AND LPC	+.30	+.19	+.13
INTRA AND D	-.51***	-.40**	-.71**
TASK AND SOCIAL	-.18	-.73***	-.48*
	N=31 ⁺	N=44	N=14

* p < .05
 ** p < .005
 *** p < .001

Note: Correlations in the low LPC group are based on various sample sizes: In the cases of LPC/ASo, Inter/Intra, Inter/LPC, Intra/LPC N=30; Inter/ASo and Intra/ASo are based on an N of 29.

The significance of the differences between the correlations in sub-samples with like LPC scores was calculated (see Table 63). Of the eighteen comparisons, 3 were significantly different.

These findings failed to support those obtained in the main study, i.e. they did not show leadership experience to moderate the relationships between LPC scores and other variables.

Subjects with similar leadership experience but different LPC scores were also compared. This revealed whether or not the relationships between the variables differed depending on the size of a subjects LPC score. Of the 42 comparisons, 5 were significant (Table 64).

These results differed from those in the main study where the size of an individuals LPC score moderated the size and direction of the relationships between the variables, particularly in the 'without experience' sample (see Chapter 7, Table 40).

The one relationship which did appear to be moderated by the size of a person's LPC score was that concerning LPC and D scores (ASo). Three of the six differences were significant, these being between low and moderate, and low and high LPC samples. Again, these results differed from those obtained in the main study where only one of the six comparisons was significant.

These results were consistent with the others reported in this Chapter: they were mainly non-significant and failed to replicate those obtained in the main study.

7. DISCUSSION OF RESULTS

The results are summarised in Table 65.

As in the main study, hypotheses I, III and IV lacked empirical support, suggesting that LPC and ASo were unrelated to the types of differentiation

TABLE 63

COMPARISON OF WITH AND WITHOUT EXPERIENCE SUBJECTS HAVING THE SAME LPC SCORE
(LOW, MODERATE OR HIGH)

	HIGH		MODERATE		LOW	
	WITH	WITHOUT	WITH	WITHOUT	WITH	WITHOUT
INTER / INTRA	r + 58 z = 1.78 p, NS	r + 86 z = 1.78 p, NS	r + 37 z = 3.39 p < .005	r + 78 z = 3.39 p < .005	r + 47 z = 0.45 p, NS	r + 55 z = 0.45 p, NS
INTER / LPC	r + 02 z = 1.10 p, NS	r + 39 z = 1.10 p, NS	r + 09 z = 0.36 p, NS	r + 16 z = 0.36 p, NS	r - 14 z = 2.12 p < 05	r + 36 z = 2.12 p < 05
INTER / ASO	r - 15 z = .85 p, NS	r - 42 z = .85 p, NS	r - 21 z = -0.52 p, NS	r - 30 z = -0.52 p, NS	r - 26 z = 0.94 p, NS	r - 46 z = 0.94 p, NS
INTRA / LPC	r - 34 z = 1.81 p, NS	r + 30 z = 1.81 p, NS	r - 04 z = 1.19 p, NS	r + 19 z = 1.19 p, NS	r + 05 z = 0.33 p, NS	r + 13 z = 0.33 p, NS
INTRA / ASO	r - 07 z = 1.24 p, NS	r - 51 z = 1.24 p, NS	r - 21 z = 1.09 p, NS	r - 40 z = 1.09 p, NS	r - 26 z = 1.84 p < 05	r - 71 z = 1.84 p < 05
TASK / SOCIAL	r - 11 z = 0.19 p, NS	r - 18 z = 0.19 p, NS	r - 59 z = 1.30 p, NS	r - 73 z = 1.30 p, NS	r - 29 z = 0.9 p, NS	r - 48 z = 0.9 p, NS
	N = 32	N = 14	N = 82	N = 44	N = 44	N = 31

TABLE 65

SUMMARY OF RESULTS OBTAINED IN REPLICATION OF MAIN STUDY

	<u>HYPOTHESIS</u>	<u>TOTAL SAMPLE ANALYSIS</u>	<u>STRATIFIED SAMPLE ANALYSIS</u>
I	LPC + correlated with INTER and INTRA	Small, non-significant correlations	Small, non-significant correlations.
II	LPC - correlated with D (ASO)	Large, negative correlation	Small, non-significant r in high LPC sample
III	D - correlated with INTER and INTRA	Small, non-significant correlations	Only 2 of the 6 correlations were significant (both in moderate LPC sample)
IV	TASK and SOCIAL scores highly correlated in low LPC sample	-	Low and high LPC scorers did not differ from each other.

WITH / WITHOUT EXPERIENCE
COMPARISONS

Relationships between the variables differs depending on LPC score and leadership EXPERIENCE

Experience did not moderate the relations between the variables

Experience did not moderate the relationship between LPC and other variables

Size of LPC score did not moderate the relationships between the variables.

investigated. This continued to be the case when the sample (with experience only) was stratified into low, moderate and high LPC groups.

Hypothesis II was supported by the data obtained from the total, with experience sample and the low and moderate LPC sub-samples. A small, non-significant correlation between LPC and D in the high LPC sub-sample replicated that found in the main study.

D scores and differentiation were found to be correlated in the moderate LPC sample. These findings contrasted with those of the main study, where significant relationships were found in the high LPC sub-sample. Since the results of the main study were clearly not reliable, it seemed necessary to conclude that D scores and differentiation are unrelated.

One of the major conclusions reached in the main study was that relationships between LPC and other variables varied depending on the size of a subjects LPC score and whether or not they had leadership experience. The same appeared to be true of relationships between D scores and other variables. This conclusion was not supported by the results obtained in the replication. Neither leadership experience, nor the size of a subject's LPC score appeared to moderate the relationships between the variables.

These findings led to the following conclusions:-

- (a) Neither of Fiedler's predictor measures, LPC or ASo, reflect the types of differentiation studied.
- (b) LPC and ASo are significantly correlated except in the case of high LPC scorers.
- (c) Whilst evidence has been obtained suggesting the LPC scale to be multidimensional, no such evidence was obtained in the replication.

- (d) Whether or not a subject has leadership experience has no bearing on the meaning of LPC scores when considered as measures of intrapersonal and interpersonal differentiation.
- (e) LPC and ASo do not appear to reflect different attributes.

It was difficult to imagine why so many of the findings obtained in the main study were not replicated. The subjects were from a similar population and the same measuring instruments were used. It may be that LPC scores are unstable (Stinson and Tracy, 1974), or it may be that they are 'systematically unreliable'. In other words, the relationship between LPC scores and other individual-difference dimensions may vary depending on the status of some other variable(s). Whilst the results reported in Chapter 7 suggested that leadership experience might be a moderator variable in this context, the replication data did not support this interpretation. Another possibility may be that the situation in which the leader works moderates not only the relationship between LPC scores and effectiveness, but also relationships between LPC and other variables (Sashkin, Taylor and Tripathi, 1974).

Whatever the reason for these unreliable relationships between LPC and other variables, it seems clear that replication of research findings is absolutely essential where LPC scores are concerned.

PART IV

CONCLUSIONS: LPC SCORES AND LEADERSHIP EFFECTIVENESS

INTRODUCTION

Fiedler's contingency hypothesis was inductively derived from data obtained from a large number of groups in a wide variety of settings (see Chapter 1). Powerful criticisms have been made of Fiedler's measures (see e.g. McMahon, 1972) and the criteria by which the validation data are assessed (see e.g. Shiflett, 1973).

Despite these criticisms, many authors believe Fiedler's contingency hypothesis (CF) to be supported by the validation data (see e.g. Handy, 1976; Herbert, 1976): perhaps it is for this reason that his model continues to be widely quoted and subjected to empirical tests.

In order to establish whether or not Fiedler's CF was supported by the data, studies claimed as tests of the CF were critically examined in Part I of this thesis. It was concluded that Fiedler's contingency hypothesis lacked empirical support. However, two other conclusions were also implied by the data:-

- (a) High and low LPC leaders consistently differ from each other in their effectiveness in octant 1, but not in other octants.
- (b) Sizeable correlations are often obtained between LPC scores and performance data (see page 55).

These findings were taken to suggest that Fiedler's predictor measures were worthy of further research. It was felt that if the

meaning of LPC (and ASo) scores could be established, this would provide a significant contribution to the understanding of factors which influence leadership effectiveness. In consequence, critical reviews were made of existing interpretations of LPC scores and the empirical evidence cited in their support. These reviews led to certain conclusions which directed the empirical investigations reported in Part III of this thesis.

The results of these reviews and investigations are summarised and discussed in Chapter 10. Conclusions are also drawn regarding the meaning and utility of Fiedler's predictor measures and his model of leadership effectiveness.

CHAPTER 10

FIEDLER'S PREDICTOR MEASURES AND LEADERSHIP EFFECTIVENESS:

CONCLUSIONS

1. LPC SCORES AND LEADERSHIP BEHAVIOUR

Fiedler (1958) suggested that low LPC leaders behaved in a 'task-oriented' manner whilst high LPC leaders behaved in a 'relationships-oriented' manner. He assumed that they consistently behaved in these ways, whatever their work situation. The results of empirical investigations failed to validate this interpretation: high and low LPC leaders do not consistently differ from each other in the frequency with which they employ 'task' and 'relationships-oriented' behaviours (see Chapter 3).

Instead it seems that high and low LPC leaders behave differently in different task situations. Furthermore, in laboratory studies, they have been observed to vary their behaviour during task performance. However, because researchers have used different measures of leader behaviour (including their own unvalidated ones) and made assumptions about the nature of the situation in which the leader was operating, it is impossible to deduce exactly how high and low LPC persons behaved in particular situations, or what factors caused them to change their behaviour.

It seems unlikely that progress will be made in understanding the relationship between LPC scores, leader behaviour and effectiveness until a valid metric is developed with which to describe different leadership situations. Furthermore, since different measures of leader behaviour produce conflicting results, it will be necessary to

establish which are the best predictors of effectiveness.

In view of the fact that leaders seem to vary their behaviour, questionnaires which require e.g. subordinates, to provide normative descriptions of their leader's behaviour seem to be of little use. This is because they obscure variations in leader behaviour. A more fruitful alternative (where paper and pencil measures are concerned) might be questionnaires designed to assess the variability of a leaders behaviour (see e.g. Hill, 1973) and the conditions in which it varies.

One final point should be made about Fiedler's predictor measures as correlates of leadership behaviour. This is that little is known of the behavioural significance of ASo (D scores). It seems unwise to assume that merely because LPC and ASo are often correlated they will show the same relationships with measures of leader behaviour.

2. FIEDLER'S INTERPRETATIONS OF LPC SCORES

"The (LPC) score has ... been extremely resistant to any meaningful interpretation despite a persistent and intensive effort which has extended over nearly two decades. LPC is uncorrelated with most personality test scores and various attempts to relate the score to self descriptions ...have led to complex or inconsistent results."

Fiedler, 1972, page 392.

Fiedler has produced two interpretations of LPC scores which cater for the relationships observed between these scores and leader behaviour. Both were critically reviewed in Part II of this thesis. The results of those reviews will now be reconsidered.

2.1 Fiedler's goal-hierarchy interpretation of LPC scores

The formal adequacy of the goal-hierarchy interpretation was criticised on a variety of points. The 'theory' was found to be

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2.1 Fiedler's goal-hierarchy interpretation of LPC scores

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based on a number of dubious assumptions, and its central propositions were not stated with sufficient precision to make them easily testable (see Chapter 4).

Fiedler did not report the results of any research specifically designed to test this theory. Instead he selected and cited data from existing studies. However these data, when cited in this context, were either irrelevant, uninterpretable or failed to support his claims. In consequence, Fiedler's goal-hierarchy interpretation has failed to advance our understanding of LPC (or ASo) scores.

2.2 Foa et al's 'differentiation-matching' interpretation of LPC scores.

Foa, Mitchell and Fiedler (1971) presented an interpretation of LPC scores which involved the construct 'cognitive differentiation'. They advanced three propositions, each of which they claimed to be supported by the available data. Their first proposition (a) was that high LPC leaders differentiate more between the various aspects of task situations than low LPC leaders. Direct tests of this proposition provide it with little empirical support. However a variety of studies obtained evidence to suggest that LPC scores are associated with some types of differentiation, although not necessarily in the way predicted by Foa et al.

Their second and third propositions (see page 122) involved a number of questionable assumptions. Furthermore it was impossible to assess their validity by the usual empirical criteria since no adequate tests were reported.

Foa et al's differentiation-matching interpretation constitutes an ambitious piece of theorising which is probably only of heuristic value:-

(a) The central construct-cognitive differentiation, appears to be multidimensional (see page 119). It is therefore unclear which type(s), if any, LPC scores reflect. Whilst Foa et al have specified the 'type' of differentiation they expect to be associated with LPC scores, they accept observed relations between LPC scores and other types of differentiation as providing 'general support' for their proposition. This practice makes it difficult to interpret the results of studies where LPC scores and differentiation are found to be unrelated.

(b) Their interpretation of the situational component of the CF as a dimension of degree of differentiation is methodologically unacceptable and conceptually unsatisfactory. It is unacceptable for the same reasons that the induction of a dimension of 'situational favourableness' from GA, TS and PP was rejected (see page 15). Their interpretation is conceptually unsatisfactory because the two extremes of the situational 'dimension' are viewed as equivalent. The inevitable consequence of such a view should be that the situational components of the contingency are incorrectly ordered.

Foa et al's interpretation has been of some value in that it has re-focussed attention on LPC scores as possible indicators of an information processing variable. Such a perspective seems promising

since it provides a clear logic as to why leaders effectiveness should vary from one situation to another (see page 140).

Of the studies designed to test Foa et al's first proposition, over half found sizeable, significant relationships between LPC scores and various measures of differentiation. This has not been the case with any other individual-difference variable. These results seem to provide general support for an interpretation of LPC scores in terms of some sort(s) of differentiation. In conclusion, Foa et al's 'differentiation matching' explanation of Fiedler's contingency seems open to serious logical and empirical criticism. However, those investigations which have examined LPC scores as possible correlates of differentiation, have obtained evidence of a general kind to suggest that LPC scores may reflect some information-processing capacity.

3. AN INFORMATION-PROCESSING INTERPRETATION OF LPC SCORES

The research programme reported in this thesis was designed to assess the validity of an information-processing interpretation of LPC scores. This was achieved in two ways: survey research of relationships between LPC, ASo and various measures of differentiation (Chapters 6, 7 and)); and an experimental investigation of relationships between LPC scores and leader's perceptions of different leader behaviours (Chapter 8).

3.1 Results: LPC, ASo and differentiation.

The results of the pilot and main studies showed LPC and ASo to be related to some measures of differentiation but not others. This suggests that the measures used (or at least some of them),

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3.1 Results: LPC, ASo and differentiation.

The results of the pilot and main studies showed LPC and ASo to be related to some measures of differentiation but not others. This suggests that the measures used (or at least some of them),

lacked construct validity, and/or that the concept of differentiation is multidimensional. The results of a literature review provided support for the latter view (see Chapter 5).

The data obtained in the main study showed that the relationships between LPC and other variables differed from those involving ASo. Furthermore, the size and direction of the relationships varied depending on the subjects LPC score (high, moderate or low) and their previous leadership experience. These results seemed to provide an explanation of why previous studies failed to find reliable relationships between LPC scores and scores on other individual-difference dimensions: the moderator effects of these variables had never been taken into account. These findings were also taken to suggest that Fiedler was incorrect in assuming that LPC and ASo scores are (always) highly correlated and therefore to be interpreted in a similar way. This conclusion has serious implications since much of the data from which the CF was derived involved ASo/performance correlations, whereas in the validation studies, LPC/performance correlations have been calculated. It may be that a contingency involving ASo will require a different explanation from one involving LPC scores.

In view of the importance and complexity of the main-study data, it was decided to conduct a replication. This was achieved using the same measures and procedure on a larger sample of subjects. Almost none of the findings replicated. The majority of the correlations were small and nonsignificant (see Chapter 9). The implications of these results were in direct contradiction with those drawn from the results of the main study. LPC and ASo seemed unrelated to any of the measures of differentiation, and neither the size of a person's LPC

score not their leadership experience seemed to moderate the relationship's between the variables.

There seem at least five possible reasons why the main study findings were not replicated.

(a) LPC/ASo scores are unreliable. Some evidence has been collected that suggests this may be true of LPC scores (few coefficients have been cited with respect to the test-retest reliability of ASo). Table 66 contains these coefficients which range from .23 to .85 (LPC) with a median of .57. In general larger coefficients are associated with short time intervals (3 - 5 weeks). In the study by Bons and Fiedler, where the time interval was 6 - 9 months, the stability coefficient was only .54. Furthermore, 38 of these subjects changed category from high to low LPC or vica-versa (Bons and Fiedler, 1976, page 456). Stinson and Tracy (1974) reported similar findings in each of the six samples they studied.

These observations are a greater source of concern, since:-

the instability of classifications based on LPC scores is perhaps of more practical significance than the correlational instability exhibited by the scores themselves. Stinson and Tracy, 1974, page 482.

In conclusion, the test-retest reliability of LPC scores seems variable, and often unacceptably low. This may have accounted for the failure to replicate the main study.

(b) Scores derived from Bierli's MRT are unreliable. Bierli's measure has usually been scored for interpersonal differentiation only. The reliability coefficients have been found significant

TABLE 66

THE TEST-RETEST RELIABILITY OF FIEDLER'S PREDICTOR MEASURES

<u>SOURCE</u>	<u>COEFFICIENTS</u>			<u>SUBJECTS</u>	<u>N</u>
	<u>LPC</u>	<u>ASo</u>	<u>TIME</u> <u>INTERVAL</u>		
Fiedler 1967 (from Drucker)	.57	.74	8 wks.	Experienced leaders	54
	.47	.52	8 wks.	Inexperienced leaders	32
	.41	.50	8 wks.	Inexperienced non-leaders	133
	.31	.33	8 wks.	Experienced non-leaders	62
Fiedler 1967	.68		8 wks.	Air-force officers	?
Bons and Fiedler 1976	.54		6-9 mnths.	Infantry-squad leaders	115
Gruenfeld <u>et al</u> 1969	.85		5 wks.	Students	24
Stinson and Tracy 1974	.49		8 wks.	College 'Seniors'	30
	.23		8 wks.	College 'Seniors'	104
	.73		3 wks.	Supervisors	24
	.80		3 wks.	College 'Juniors'	42
	.81		8 wks.	Supervisors	13
	.46		8 wks.	College 'Juniors'	47
Fox 1976	.75		4 wks.	Tax examiners	114
	.68		9 wks.	Students (asked to describe same person)	61
	.66		9 wks.	Students	80
	.51		9 wks.	Students (asked to describe different person)	43

(see e.g. Vannoy, 1964; Smith and Leach, 1972). However, they have also been found to vary in size depending on the 'intelligence' of the subjects (Bieri, 1965; range of r 's = .46 to .80). The 'imperfect' reliability of these scores may have contributed to the loss of significance in the replication.

(c) Relationships between LPC(ASo) and other scores are unreliable. This may be the case because of the 'imperfect' reliability of the measures concerned. Other than this it is possible that these relationships may vary due to the effects of some unknown moderator variables. For example, Sashkin, Taylor and Tripathi (1974) obtained evidence which suggested that the leadership situation moderates the relationship between LPC scores and other psychological variables. If this were the case, it may explain the failure to replicate the results of the main study.

(d) The two samples were drawn from different subject populations. This seems a rather unlikely explanation. Both samples consisted of part-time students studying for various managerial qualifications. Although no information was systematically gathered regarding their ages and occupational backgrounds, there were no obvious differences.

(e) To these explanations must be added the possibility that the relationships observed in the main study were not statistically reliable and should not have been expected to replicate. It is true that the correlations were based on small samples (Min = 8, Max = 24) and therefore had wide confidence limits.

However, many of them were large and statistically significant. Furthermore, some continued to be significant even if the true value of the correlation was assumed to be equal to the lowest confidence limit. On balance, this explanation seems to lack support.

In conclusion, explanations (a, b and c) seem the most supportable. Both a and c seem to cast some doubt on the utility of LPC and ASo scores as predictors of leadership effectiveness. It seems that even when sizeable, statistically significant relationships are found between LPC scores and other variables, they are not replicated.

On balance, these findings seem to provide little support for the differentiation interpretation of LPC/ASo scores. It continues to be possible that Fiedler's predictor measures reflect a particular type of differentiation not examined in this research programme. However, it seems unlikely that they reflect a general information processing trait.

3.2 Results: LPC, leadership experience and subjects perceptions of different leadership behaviours.

A more direct way of testing an information-processing interpretation of LPC scores was suggested by considering the implications of contingency approaches to leadership effectiveness. Such approaches assume that no one style of leadership behaviour will be equally effective in 'all' situations. It follows from this that to be effective in a variety of situations, a leader must possess certain information-processing skills, and an ability to vary his behaviour 'appropriately'.

One of these skills seemed likely to be an ability to distinguish between different 'types' of leadership behaviour. It was therefore predicted that high LPC scorers, assumed to be high differentiators, would distinguish between different types of leadership behaviour more accurately than would either moderate or low LPC scorers. Furthermore, in view of the results of the main study, it was hypothesized that leadership experience would interact with LPC scores to influence subjects perceptions (see page 189).

These hypotheses were tested by independently manipulating two levels of consideration and initiating-structure. Subjects were required to rate these behaviours using a shortened version of the LBDQ. An analysis of variance was performed on the results with perceived consideration and perceived structure as the dependent variables. The independent variables were: manipulated consideration and manipulated structure (2 levels), LPC scores (3 levels) and leadership experience (2 levels).

The results failed to support the differentiation interpretation of LPC scores. Furthermore, the high and low LPC subjects did not differ significantly from each other in their perceptions of the different combinations of leader behaviour. This being the case, these data provide no indication as to why high and low LPC leaders may differ in their effectiveness. When taken with the results obtained in the survey research (see Chapters 6, 7 and 9), these data fail to support a differentiation interpretation of LPC scores, and by implication, fail to support Foa, Mitchell and Fiedler's 'differentiation-matching theory.

However, the data from the behaviour-manipulation experiment had other implications. Significant interactions showed that subjects perceptions of the leader's behaviour varied depending on their LPC scores and leadership experience. If the way a leader is seen to behave by his group members influences his effectiveness, then the type of subordinates he has clearly constitutes a significant feature of the situation in which he operates. That this might be the case has received relatively little attention from researchers. Only in recent years has the reaction against the 'trait approach' (see page 1) allowed investigation of e.g. personality factors of subordinates related to their perceptions of a leaders behaviour.

Such studies have found the following attributes of subordinates to be associated with their perceptions of their leaders behaviour: authoritarianism (Haythorn et al, 1956), nAch (Misumi and Seki, 1971), internal-external control (Pryer and Distefano, 1971; Evans, 1974; Durand and Nord, 1976), two way interactions between sex and education, and race and service, and the level of the subordinates 'morale' (Johnson and Bledsoe, 1973). The implications of these findings, along with those reported in this chapter, are well summarised by Durand and Nord (1976).

the systematic effect of subordinates personalities on their perception of supervisory behaviour suggests that the use of the LBDQ (and other instruments which classify supervisors on the basis of descriptions by their subordinates) may be improved by controlling for the personality characteristics of subordinates. *ibid* page 436.

This brings us back to the question of the utility of the LBDQ as a measure of leader behaviour. Earlier in this thesis it was concluded that leaders vary their behaviour and that these variations are obscured by asking for general, rather than situation-specific

descriptions of a leaders behaviour (see Chapter 3). Others have suggested that averaging LBDQ scores from a number of group-members confounds possible variations in the leader's behaviour from one subordinate to another (see e.g. Blanchard, 1973).

To these points must now be added the fact that different 'types' of subordinates describe their leader in different ways. Whilst the direction of causation may vary depending on the particular attributes (of the subordinates) concerned, it seems likely that in some cases, subordinates descriptions of a leaders behaviour depend on those attributes. Whilst this reduces the validity of the LBDQ as a measure of leader behaviour, it can be coped with in the manner described by Durand and Nord (ibid).

This leaves the problem of how to handle variations in a leader's behaviour due to differences between situations and differences between group-members. If subordinates descriptions are used to obtain information on the leader's behaviour, it may be difficult to distinguish between these two sources of variance. One way of doing this would be to use a measure specifically designed to assess the degree to which a leader varies his behaviour. This may be achieved by using a measure such as that designed by Hill (1973), or by revising the LBDQ to obtain situation-specific descriptions.

4. CONCLUSIONS: LPC SCORES AND LEADERSHIP EFFECTIVENESS

In a recent conference on leadership, Ralph Stogdill commented that:

Fiedler's LPC measure appears to be the one leadership variable that is consistently related to performance. Stogdill, 1973 page 103 (emphasis added).

A fellow discussant was prepared to go further:

LPC ... is certainly a consistent predictor of group performance. Fleishman, 1973, page 183 (emphasis added).

These comments raise two broad questions: are they valid, and if so, - so what?

4.1 Relationships between LPC scores and effectiveness.

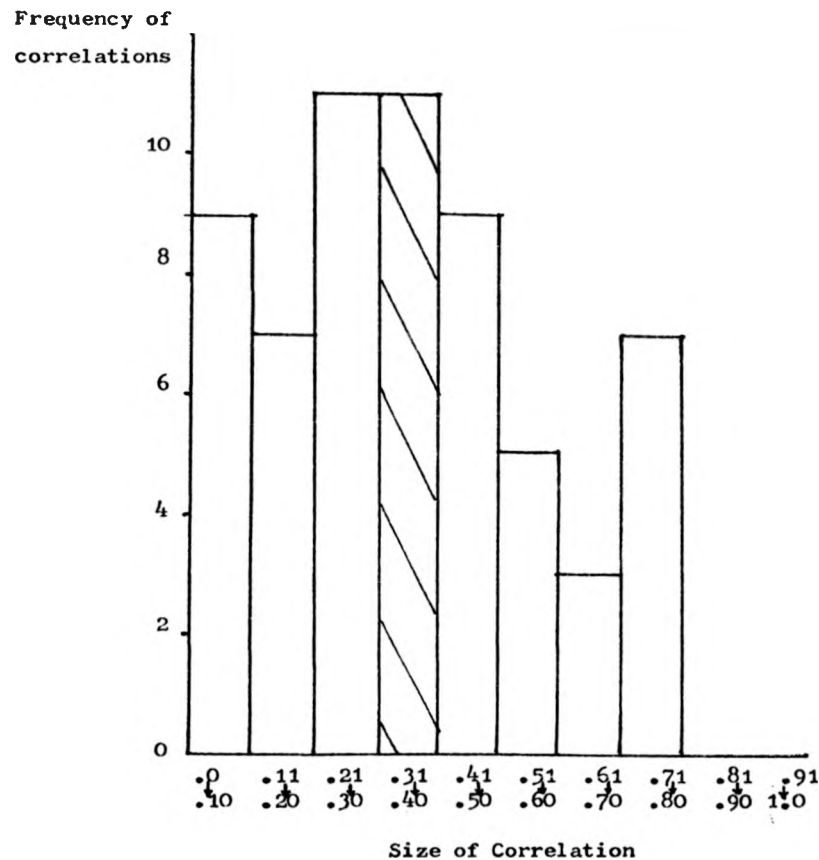
Whether or not LPC scores are related to effectiveness can be judged by the size and significance of the correlation coefficients between LPC and various measures of effectiveness. Fiedler (1971) reviewed the relevant research and claimed that the contingency hypothesis (CF) was supported by the results of field studies. In other words, he claimed that leader LPC scores and effectiveness are reliably associated. Of these studies, those which were available for critical appraisal were reviewed in Chapter 2. The correlations obtained in these studies are categorised in Figure 31. As can be seen, no correlation was larger than 0.8, the median being in the class 0.31 - 0.40. One third of the coefficients ($N = 62$) were larger than 0.4, which has already been suggested to be unusual where relationships between individual-difference variables and group performance are concerned (see page 57). One further point should be made which is that only three of these correlations were reported to be statistically significant (+62, $p < .10$; +77 and +77, $p < .01$). However, in view of the sizes of the samples involved, this is not suprising.

On balance, these data seem to support Stogdill's conclusion (ibid) that LPC scores are related to group performance. However, whether or not these variables are causally related is another matter.


FIGURE 32

CLASSIFICATION OF THE SIZE OF LPC/PERFORMANCE CORRELATIONS

OBTAINED IN STUDIES CITED BY FIEDLER 1971



NOTES: A total of 62 correlations are classified. They are all based on interacting groups only and were obtained in the following studies: Hunt 1967, Hill 1969, Fiedler 1966, Chemers and Skryzpek 1972, Graen *et al* 1971, Fiedler *et al* 1969, and Nealey and Blood 1968. Correlations from the following studies were not included: Shima 1968 (used ASo scores), O'Brien 1969 (he manipulated leader behaviour) and Kretzschmar and Luecke 1969 (the leaders rated their own performance). The unpublished results of studies used by Fiedler 1971 were also left out.

LEGEND:  = Median class

Notions about 'engineering the job' to fit the manager, or placing a leader in a situation 'appropriate' to his LPC score (Fiedler 1965), rest on the assumption that variations in the size of leaders LPC scores cause variations in group performance. It is equally possible that variations in group performance cause variations in the leaders LPC score. In a slightly different context, group performance has been found to cause leader behaviour (e.g. Lowin and Craig, 1968), and evidence of reciprocal causation has been obtained (e.g. Greene 1973, 1975; see Kerr and Schriesheim, 1974). The possibility that LPC scores may be affected by group performance seems to have received little attention.

Bearing these points in mind, the question of whether or not LPC scores predict group performance can now be considered. This may be achieved by examining the results of studies which constitute adequate tests of the contingency hypothesis. In Chapter 2 of this thesis, the studies claimed by Fiedler (1971) as tests of his CF were reviewed. Five of these were judged to be adequate tests of the CF, which provided 51 LPC/performance correlations in the cells of Fiedler's model. Seventy-two percent of these coefficients were in the direction predicted by Fiedler 1967 (see Figure 13).

If the direction of these correlations were the only criterion by which the data should be assessed, then Fiedler's model has empirical support. Whilst Fiedler has used different criteria, depending on the data concerned, he has consistently argued that the validity of his hypothesis may be judged by the direction of the correlations obtained in validation studies (see e.g. Fiedler 1971). Others disagree with him (e.g. Graen et al 1971; Ashour 1973;

Shiflett, 1973)). In Chapter 2 it was suggested that the size and consistency of the coefficients should also be taken into account. When this is done, Fiedler's CF appears to have little support. Only in octant 1 are all the correlations 'large' and in the predicted direction (see Figure 13).. In all the other octants (with the possible exception of octants 4 and 5) the data appear to be randomly distributed. The only possible conclusion is that LPC scores do not predict group performance except in octant 1 of the contingency graph.

It is possible that since Fiedler's 1971 review, the results of tests of his CF are generally supportive. Many validation studies have been conducted since that date (e.g. Hardy 1971, 1975; Hardy et al 1973; Hardy and Bohren 1975; Hovey 1974; Csoka 1975; Rice and Chemers 1973; Reavis and Derlega 1976; Smith 1974). The only major change in the methodology of such studies has been the increasing use of analysis of variance rather than LPC/performance correlations. However, on balance, the results of these investigations do little to alter the conclusions described earlier. No consistent picture emerges from the results of the analyses of variance (compare for example Graen et al 1971, Hardy et al 1973, Chemers and Skryzpek - analysed by Shiflett 1973, Shiflett and Nealey 1972). As tests of Fiedler's CF, many of the studies are open to severe methodological criticisms (e.g. Hardy and Bohrem 1975; Reavis and Derlega 1976; Hovey 1974). Some of the more adequate studies obtained support in certain octants (e.g. Hardy 1971, Hardy et al 1973) but the mean differences were often small.

In conclusion, it seems impossible to agree with Fleisman's view of LPC as a 'consistent predictor' of group performance (ibid, page 240).

4.2 The utility of Fiedler's Predictor measures

The utility of LPC scores depends upon their stability. As was noted earlier in this chapter, the evidence on this matter is at best equivocal and casts considerable doubt on their test-retest reliability. If LPC scores are unreliable, their relationships with other variables - including effectiveness, will also be. This being the case, it seems somewhat premature to use them as indicators of the need for 'situational engineering', or for the purposes of placement (see Fiedler 1965; Fiedler, Chemers and Mahar 1976).

The meaning of LPC scores continues to be a matter of speculation. Two recent interpretations in terms of a 'goal-hierarchy' and 'differentiation-matching' are deficient as theories, and lack empirical support (see pages 100 to 143). Tests of a more general information-processing interpretation also failed to cast light on their construct validity (see Chapter 8). No other satisfactory interpretation of LPC scores exists. Whilst they appear to reflect complex differences in leader behaviour, these differences can not be described with any precision due to the absence of a valid metric for describing different leadership situations.

Fiedler's LPC scores appear to correlate with effectiveness data, however sometimes the relationships are positive and sometimes they are negative. Whilst Fiedler has hypothesized that the direction of the correlations depend on interactions between group atmosphere, task structure and position-power, the weight of evidence does not support his claim. Furthermore, Fiedler's measures of these variables, and his method of combining them into an assumed dimension of 'situational favourableness' are subject to serious criticisms

(see Chapter 2; see also Ashour 1973a; Shiflett 1973; Chemers and Rice 1974; McNahon 1972). In addition, Korman and Tanofsky (1975) have detailed a number of problems associated with contingency models in general, which seem particularly pertinent where Fiedler's model is concerned.

When taken together, these criticisms suggest that Fiedler's contingency model should be rejected. Whether or not LPC scores should be abandoned seems more difficult to decide. Their test-retest reliability is in doubt, they are uninterpretable, they do not predict differences in effectiveness - nor will they be able to do so until a valid metric has been devised for describing different leadership situations. On the other hand they frequently show sizeable relationships with group performance. On balance, it seems necessary to conclude that Fiedler's Least Preferred Coworker measure should also be abandoned.

4.3 Suggestions for future research

It is clearly possible to accept the criticisms of Fiedler's model presented in this thesis but disagree with the conclusions. It may be felt that to entirely reject Fiedler's model would be tantamount to:

throwing the proverbial baby out with the
proverbial bath-water. Shiflett 1973, page

The views of this researcher on this particular issue have already been expressed. To continue the metaphor, the baby has already gone down the plughole. However, those who continue to have doubts can only resolve them by looking for further information on the following three issues.

(a) How reliable are LPC scores? Does their reliability depend on certain characteristics of the scorer (e.g. age; leadership experience; the 'intelligence' of the scorer - see Bors and Fiedler 1976; their intervening experience - see Fiedler 1967).

(b) Is the meaning of a person's LPC scores 'situation-specific' as was suggested by the results of Sashkin et al (1974). If it is, this would explain why relationship between LPC scores and other individual-difference dimensions have been small and inconsistent. This question maybe answered by replicating the study conducted by Sashkin and his colleagues. If it turns out that LPC scores are only meaningful when the nature of the work situation is taken into account, then future research into their construct validity will require a valid means for describing different leadership situations. This raises a third area requiring further research which is:-

(c) What 'dimensions of difference' characterize leadership situations and how do they interact? The lack of valid and sufficient answers to this question hampers contingency theory in general. However in the context of Fiedler's model, the absence of a valid scheme for classifying leadership situations renders it impossible to describe or analyse variations in leader behaviour associated with variations in LPC scores and situations (see Chapter 3). Without such a taxonomy it is also impossible to predict relationships between LPC scores and effectiveness.

Whilst Fiedler 1967 predicted which situational dimensions are of importance (GA, TS and PP), and the relative size of their effects,

these predictions were based on after the fact interpretations of his data (see Chapter 1). These predictions have not been supported by the research, nor has Fiedler explained why they should be. In view of the weaknesses of his paper and pencil measures of these variables (see page²²⁵), future attempts to test his predictions should manipulate these factors and assess their relative contributions by means of analysis of variance.

Fiedler clearly recognizes that other situational factors may also have significant effects on a leaders effectiveness (see e.g. Fiedler 1967). Many such factors have been identified (see e.g. Kerr et al 1974). Future research should be aimed at building these variables into normative models of leadership effectiveness. It may be that this will be most effectively achieved by developing 'small-scale' models with an explicit and limited range of application, rather than by trying to predict the effectiveness of leaders of basket-ball teams, supervisors of shop-floor operators, and chairmen of boards of directors using the same set of variables (as attempted by Fiedler 1967).

Other approaches to the study of leadership effectiveness are more centrally concerned with leadership behaviour (see e.g. Kerr et al 1974; House 1971; Bowers and Seashore 1966) and its role in determining leadership effectiveness. In consequence, a major theoretical and methodological decision must be made as to how to measure such behaviour. Should the descriptions be obtained from the leaders themselves, from their group members, or from independent observers? The implications of this decision are considerable since it has been demonstrated that descriptions from these various sources

are often unrelated (see page 62). If it is assumed that the way in which a leader is seen to behave by his group members is a significant factor influencing his effectiveness, a number of problems have to be dealt with.

The first is that different subordinates may perceive and describe the same types of leadership behaviour in different ways depending on characteristics which they themselves possess (see page 238). The manner in which this difficulty may be handled has already been described (see page 238) and should be employed in future research of this kind. Second, group members may differ in their descriptions of their leader's behaviour because he has in fact varied his behaviour depending on who he was dealing with. Ways of dealing with this source of variance in leader-behaviour descriptions have also been suggested (see page 239). A more radical alternative has recently been described by Dansereau, Graen and Haga (1975) utilizing 'vertical dyad linkages'. Whether or not variations of this sort need to be taken into account in analysing the relationship between leader behaviour and leadership effectiveness, and secondly, how this should be done, depends on how substantial these variations are, and the size of their contribution to variations in effectiveness. These issues have received relatively little attention and clearly require further research.

Finally, it seems necessary to examine the assumption that leaders always have a significant effect on the performance of their group members. There may be situations in which causal relationships of this sort are relatively weak or non-existent.

In conclusion

It appears more and more that leadership in organisations is not a simple matter. There is no one best man, no one best method, and perhaps, no one best theory. A contingency model is the likely answer ... The Trick is to develop a model with the right contingencies, and still keep the model humanly comprehensible. Farris and Butterfield 1973 page 138

Such a theory has yet to be developed.

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APPENDIX A

SUMMARY OF STUDIES INVOLVING INTERACTING
GROUPS CITED BY FIEDLER 1971

TABLE 67

SUMMARY OF STUDIES INVOLVING INTERACTING GROUPS

CITED BY FIEDLER 1971

STUDY	Fiedler 1966	Hunt 1967	Hill 1969
TYPE OF GROUP	'ad hoc'	ongoing	ongoing
TYPE OF LEADER	assigned by experimenter	Supervisors appointed by their firm	Supervisors appointed by their firm
OCTANTS TESTED	all eight	1, 3, 5 and 7	2, 3, 6 and 7
MEASURES	LPC : form not quoted TS & PP : manipulated and not measured. GA : various measures	LPC : form not quoted TS, PP & GA : measured using scales similar to Fiedler's	LPC : form not quoted. TS, PP & GA : used measures developed by Hunt.
METHOD OF STRATIFICATION	LPC : not given TS : a priori PP : a priori GA : not given	LPC : not given TS : mid-point of scale PP : 75th percentile GA : sample median (not given)	LPC : not given TS & PP : not given GA : at the 33 and 66th percentile (not given)
FINDINGS AND THEIR STATUS	When the data are classified in the manner described by Fiedler (1967), they provide little support for the CF. (see Figure 6) Most support was found in octants 1 and 3.	Only in Octant 1 were both the correlations large and in the direction predicted by the CF. Some support in Octant 5.	Octants 2 and 3: r's were small. Octant 7: large r in direction predicted by the CF. Octant 6: direction of r conflicts with Fiedler's CF.

TABLE 67 (continued)
SUMMARY OF STUDIES INVOLVING INTERACTING GROUPS

CITED BY FIEDLER 1971

STUDY	Chemers and Skryzpek 1972	Graen, Orris & Alvares 1971	Shima 1968
TYPE OF GROUP	'ad hoc'	'ad hoc'	'ad hoc'
TYPE OF LEADER	assigned by experimenter	assigned by experimenter	elected by group members
OCTANTS TESTED	all eight	all eight	impossible to tell
MEASURES	LPC : form not quoted TS & PP : manipulated and not measured. GA : manipulated and measured - leader's GA scores.	LPC : form not quoted TS : manipulated PP : manipulated, not measured GA : leader's GA scores	ASO : 14 bipolars quoted. TS : manipulated PP : not measured or manipulated GA : leader's GA scores
METHOD OF STRATIFICATION	LPC : + and -one standard - deviations from sample mean TS : a priori PP : a priori GA : a priori	LPC : not given TS : Fiedler's criterion-level PP : a priori GA : sample median (not given)	ASO : sample median (not given) TS : a priori PP : assumed to be 'high' GA : not given
FINDINGS AND THEIR SIGNIFICANCE	Seven of the correlations were in the direction predicted by the CF. All were small and unreliable.	Seven of the 16 correlations were in the direction predicted by Fiedler's CF. Eight of the sixteen r's were >0.4. The manipulation of PP seemed questionable.	Correlations of -.26 and +.71 were obtained. The results of this study are uninterpretable and cannot be claimed in support of Fiedler's CF.

TABLE 67 (continued)

SUMMARY OF STUDIES INVOLVING INTERACTING GROUPS

CITED BY FIEDLER 1971

STUDY	Shaw and Blum 1966	Fiedler, O'Brien & Ilgen 1969	O'Brien 1969
TYPE OF GROUP	'ad hoc' men	'ad hoc' men & women	'ad hoc'
TYPE OF LEADER	assigned by experimenter	emergent	assigned by experimenter
OCCASIONS TESTED	impossible to tell	impossible to tell	impossible to tell
MEASURES	LPC : not measured TS : manipulated PP & GA : not measured or manipulated	LPC : form not quoted GA : leader's GA scores environmental stress : ratings from project director.	LPC : form not quoted Relations between persons, positions and tasks were manipulated.
METHOD OF STRATIFICATION	All variables were either assumed to be as manipulated or assumed a priori	LPC : not given GA : split into 3 categories (scores not given) Stress: split into 3 categories (scores not given)	LPC : not given No criteria were given for stratifying the 'situational' variables.
FINDINGS AND THEIR SIGNIFICANCE	Fiedler's CF cannot be claimed to have been tested	Five of the 9 correlations were >0.4. The study cannot be claimed to test Fiedler's CF. The results support the view that the relationship between LPC scores and group-performance depends on situational factors.	Correlations of -0.08, +0.77 and -0.13 were obtained. These are uninterpretable due to the fact that leader behaviour was manipulated.

TABLE 67 (continued)

SUMMARY OF STUDIES INVOLVING INTERACTING GROUPS

CITED BY FIEDLER 1971

STUDY	Kretschmar & Luecke 1969	Nealey & Blood 1968	Lawrence & Lorsch 1967
TYPE OF GROUP	ongoing	ongoing	ongoing
TYPE OF LEADER	Managers appointed by their firm	Supervisors appointed by their firm	Managers appointed by their firm
OCTANTS TESTED	impossible to tell	impossible to tell	impossible to tell
MEASURES	LPC : ? TS, PP & GA : rated by leaders of workgroups	LPC : Fiedler's 1964 scale Power : expert & delegated Esteem for subordinates: leaders confidence in, and friendship for subordinates	LPC : Organisational Performance Structure of Sub-systems
METHOD OF STRATIFICATION AND DEFINITION OF LEVELS	?	LPC : not given Relations between the variables were examined by ANOVA. A summary table was not given.	?
FINDINGS AND THEIR STATUS	Irrelevant to an appreciation of Fiedler's CF: the definition of the situation was not independent of the leader.	Correlations of -0.22 and +0.79 were obtained between leader LPC scores and performance ratings. Fiedler concluded that these findings supported his CF. In the absence of measures of TS, PP & GA, these data have no bearing on Fiedler's CF.	Fiedler correlated LPC scores and performance data obtained by Lawrence & Lorsch. The correlations are irrelevant to an appreciation of Fiedler's CF: the correlations cannot be attributed to any of the Octants.

TABLE 67 (continued)

SUMMARY OF STUDIES INVOLVING INTERACTING GROUPS

CITED BY FIEDLER 1971

STUDY	Anderson 1966
Mitchell 1969, Butterfield, Rielly, Nealey & Shiflett, Fiedler & Barron, Executive development workshop.	The post-hoc analyses reported by Fiedler 1971 were not reported by Anderson. In consequence, the validity of Fiedler's conclusions cannot be evaluated.
COMMENT	
These studies are unpublished and not available for critical evaluation.	

APPENDIX B

A REVIEW OF THE STATISTICAL PROBLEMS INVOLVED IN TESTING FIEDLER'S CONTINGENCY HYPOTHESIS

1. INTRODUCTION

In order to test Fiedler's CF, it is necessary to locate a number of groups in each of the eight cells, and examine the relationship between the LPC/ASO scores of the leaders and some measure of the productivity of their work groups. Correlation coefficients have usually been used to calculate the nature of the relationship involved. In practice, the number of groups in each cell is usually small and, in consequence, statistically significant correlations are hard to obtain (Sashkin 1972).

As a result, a variety of procedures have been advocated to provide a more sensitive test of the contingency hypothesis. These may be categorised under three headings: techniques which combine data from different studies within each of the octants; techniques performed on data aggregated from a number of studies in all the octants; and analysis of variance.

These techniques will now be reviewed and the most appropriate methods identified. Special attention will be paid to the arguments of Fiedler (1971) and Ashour (1973).

2. ANALYSES BASED ON DATA COMBINED WITHIN OCTANTS/ACROSS STUDIES

Two such techniques have been employed:

- (a) comparison of the median correlations obtained in validation studies with the direction (+ or -) of those found in studies

on which the model was based (see 2.1);

- (b) analysis of correlations obtained in the validation studies in terms of whether or not the joint probability of the correlations in a given octant is statistically significant and in the direction predicted by Fiedler's CF (see 2.2)

2.1 Direction of the median correlations obtained in validation studies

This technique has often been employed by Fiedler (see e.g. Fiedler 1971). Given consistency in the size and direction of correlations in each cell, this method seems acceptable (Sashkin 1973). However when consistency is absent, it is extremely misleading. For example, Fiedler (1971) concluded that field tests produced results which supported his CF. However, whilst the median r in octant three was found to be negative, as predicted, the actual correlations were -80, -29 and +60. In octant six, the correlations were -30, +30 and +62. Whilst the medians were in the direction predicted (+), the results can hardly be claimed to be consistent in size or direction.

2.2 Method of joint probabilities (Fisher 1976)

When taken individually, none of the correlations reported by Fiedler (see above) were statistically significant. Since statistical significance is partly a function of sample size, Fiedler (1971, page 139) applied the method of joint probabilities to the results of nine validation studies. Statistically significant results were obtained in cells 1, 3 and 4 of the model (details of the findings were not reported).

Ashour (1973) commented that significant results should be obtained in all the octants. Failure to do so "increases doubts about the validity of the whole model" (page 344). In reply, Fiedler commented that this view was "untenable": if median r 's obtained from studies on

which the model was based were non-significant, why - he asked, should we not expect equally non-significant findings in the validation studies (Fiedler 1973, page 359).

However, it is Fiedler's view that seems untenable. In effect, he seems to be predicting a no-difference between high and low LPC leaders in certain octants. In other words, he is looking for support for the null hypothesis! In addition, the prediction of non-significant correlations is open to criticism on the grounds that such findings are ambiguous and lacking in utility. Non-significant results may reflect a real 'no-difference' between high and low LPC leaders, or they may reflect a lack of sensitivity and/or validity on the part of Fiedler's situational 'dimension'.

Like the median technique (see 2.1), use of the method of joint probabilities seems perfectly acceptable in principle. However, it must be insisted that statistical significance should be expected in every octant. Failure to find statistically significant results cannot be excused on the grounds of sample size (or any other grounds) and should be seen to cast doubt on the validity of the hypothesis.

3. ANALYSES PERFORMED ON DATA AGGREGATED ACROSS OCTANTS AND STUDIES

Three techniques of this sort have been employed:

- (a) the median correlations which define the contingency hypothesis are taken as point predictions. This set of median values is then compared with the set of medians obtained in validation studies and an overall correlation coefficient calculated (see 3.1)
- (b) the binomial distribution: this involves calculation of the probability ($p(X)$) of obtaining X correlations in the predicted direction using the following formula (Spiegel 1961

page 122)

$$p(X) = {}^N C_X \cdot p^X q^{N-X} = \frac{N!}{X!(N-X)!} \cdot p^X \cdot q^{N-X}$$

(c) Stouffer's method: individual correlations are converted into Z scores, these scores are summed, and the probability of

$$\frac{Z}{N^{\frac{1}{2}}} \text{ is calculated. (See Fiedler 1973, page 358)}$$

Before discussing each of these techniques in turn, one general point may be made. This concerns the practice of aggregating data across octants. This practice is open to one powerful criticism which is that it obscures the differential predictive power of the CF in the various octants. To explain: variations in the size and statistical significance of the correlations implies that we can be more confident about some correlations than others. The results of an earlier review (Chapter 2) suggested that large correlations are not uniformly distributed across the octants. In consequence, the results in one or two octants bias the total picture and may lead to the conclusion that the contingency hypothesis is valid. It is for this reason that techniques which combine data across octants are inappropriate and misleading.

3.1 Treatment of CF medians as point predictions

Use of this method has been advocated by Fiedler 1973 (page 359). It is subject to the general criticism stated above, plus two other serious criticisms: the statistical reliability of the medians is ignored, as is the variability of the correlations about the medians (Ashour 1973 page 370). For these reasons, this is not a valid method for assessing the degree of empirical support for the CF.

3.2 Use of the binomial formula

Fiedler has applied this test to the results of certain validation studies (see Fiedler 1971 page 139). Use of the binomial formula in this context has been criticised, as has Fiedler's interpretation of the results.

using the binomial test is a misleading procedure to test the significance of correlations. It is possible to obtain coefficients all of which are in the predicted direction and range from .01 to .05, but none is statistically significant. Applying the binomial test as used by Fiedler would indicate that they all conform to the predicted direction when every one of them could be a product of mere chance.

Ashour 1973 page 344

Fiedler replied that Ashour's argument ignored the probabilistic nature of hypothesis testing. He suggested that if 990 correlations out of a thousand were between .10 and .20, the consistency of such findings would constitute support for the CF, despite the fact that, individually, none of the correlations were significant.

Fiedler's and Ashour's opposing arguments appear to depend on their different views about what can legitimately be inferred from a statistically non-significant correlation, and on the question of how one interprets large numbers of such correlations.

Ashour implied that one cannot be confident about the size of a statistically non-significant correlation. Furthermore, if the correlation is 'small', the confidence limits will be such that one cannot be sure about the sign of the correlation. In this respect Ashour endorsed conventional statistical theory. However, he continued by suggesting that if all the correlations obtained were of the same sign (+ or -), and within a limited range of variation, this, in itself would not be significant - unless the correlations were

individually significant. In other words, Ashour seems to be saying that where statistically non-significant correlations are concerned, the coin-tossing argument of probability theory is inappropriate and invalid. In adopting this line of argument, Ashour has placed himself in a position of conflict with Fiedler, and with conventional statistical theory.

Whilst Ashour's argument is persuasive, to accept it would require rejection of the methods described in section 2. His argument is not sufficiently forceful to warrant such a step. However, use of the binomial equation in this context is rejected, but for the reason given earlier: it obscures the differential predictive power of the CF in the various octants.

Before leaving these arguments, two points should be made about Fiedler's reply to Ashour (ibid). The first is that the level of consistency referred to by Fiedler (990 r's out of a thousand in the predicted direction) is not characteristic of the results of validation studies. This level of consistency is found in only three out of the eight cells of his model (see Figure 13, page 55). Second, if as Fiedler suggested, the majority of correlations were found to be between .10 and .20, this would imply that his CF predicts such a trivial proportion of the variance that it lacks theoretical or practical utility.

3.3 Stouffer's method of combined probabilities

Fiedler 1973 applied this technique to the results of field and laboratory studies reviewed in his 1971 article and obtained a statistically significant result (see page 358). However, for reasons already given, this method does not provide a valid test of Fiedler's CF.

4. ANALYSIS OF VARIANCE

This technique has been applied in two ways depending on whether the raw performance data was available, or LPC/performance correlations:

- (a) treatment of the observed correlations as data points, and looking for significant effects due to variations in group atmosphere, task structure and position-power (e.g. Graen et al 1970 page 292) (see 4.1).
- (b) analysis of the effects of variations in LPC scores, GA, TS and PP on group performance (e.g. Hardy 1973, 1975) (see 4.2).

4.1 ANOVA : correlations as data points

This method may be used to determine whether or not anything systematic is operating on the data. However, using correlations rather than performance scores renders it impossible to investigate interactions between e.g., LPC and GA. A certain amount of information is also lost since it is not possible to deduce the degree to which high and low LPC leaders differ in their effectiveness.

In conclusion, this technique seems perfectly acceptable, however it is of limited utility.

4.2 ANOVA : group performance scores

As was pointed out by Shiflett(1973), Fiedler's CF is, in effect, an interaction hypothesis though researcher's have usually tested for main effects. Only recently have the studies by Hardy and his colleagues provided an exception to this practice (e.g. Hardy et al 1973).

However, strictly speaking, ANOVA's performed on group performance scores do not provide a direct test of the CF. This is because the CF is operationally defined in terms of LPC/performance correlations

(see Figure 1, page 3). Having said this, it would clearly be absurd to regard the results of such tests as irrelevant to an empirical assessment of Fiedler's CF. Furthermore, this technique has a number of advantages which the other techniques do not: e.g., it enables an assessment of the relative contribution of each of Fiedler's variables.

In many ways, this seems the ideal means by which to assess the validity of Fiedler's CF. It appears to have only one significant disadvantage. This is the fact that it has a limited range of application since strictly speaking, it can only be applied to group performance data which has been obtained using the same procedures. However, this is also true of the other techniques described.

5. CONCLUSIONS : STATISTICAL TECHNIQUES FOR EVALUATING FIEDLER'S CF

The question of whether or not a particular statistical technique may be legitimately applied in a certain context is not trivial. It seems particularly problematic where Fiedler's CF is concerned. Having examined the techniques which have been used, three appear to be valid and useful. These are: Fisher's method for calculating the joint probability of correlations (2.2), and the two applications of analysis of variance (4.1 and 4.2). Of these, the most sensitive test is provided by the use of analysis of variance on group-performance scores. This method combines the necessary criterion of statistical reliability with the desirable feature of being able to test the interactions implied by Fiedler's CF.

These points should be born in mind when evaluating the results of studies designed to test Fiedler's CF.

APPENDIX C

RESEARCH MEASURES, ROLE-PLAY MATERIALS
AND SCRIPTS FOR BEHAVIOURAL MANIPULATIONS

SHORT-FORM OF SBDQ USED TO RATE THE MANIPULATIONS OF

LEADER BEHAVIOUR

	1	3	5	7	9
	never		sometimes		always
1. He refuses to give in when people disagree with him	1	3	5	7	9
2. He helps his subordinates with their personal problems	1	3	5	7	9
3. He offers new approaches to problems	1	3	5	7	9
4. He "needles" workers under him for greater effort	1	3	5	7	9
5. He criticizes a specific act rather than a specific individual	1	3	5	7	9
6. He is friendly and can be easily approached	1	3	5	7	9
7. He stands up for his subordinates even though it makes him unpopular	1	3	5	7	9
8. He treats all his subordinates as his equals	1	3	5	7	9
9. He "rides" the subordinate who makes a mistake	1	3	5	7	9
10. He tries out new ideas	1	3	5	7	9
11. He expresses appreciation when one of us does a good job	1	3	5	7	9
12. He assigns people under him to particular tasks	1	3	5	7	9
13. He encourages overtime work	1	3	5	7	9
14. He tries to keep his subordinates in good standing with those in higher authority	1	3	5	7	9
15. He is slow to accept new ideas	1	3	5	7	9

	1	3	5	7	9
	never		sometimes		always
16. He demands more than we can do	1	3	5	7	9
17. He backs up his subordinates in their actions	1	3	5	7	9
18. He criticizes poor work	1	3	5	7	9
19. He sees that a subordinate is rewarded for a job well done	1	3	5	7	9
20. He criticizes his subordinates in front of others	1	3	5	7	9
21. He makes those under him feel at ease when talking to him	1	3	5	7	9
22. He insists that he be informed on decisions made by subordinates under him	1	3	5	7	9
23. He waits for his subordinates to push new ideas before he does.	1	3	5	7	9

SBDQ USED TO ASSESS THE VALIDITY OF THE SCRIPTS

1. He helps his subordinates with their personal problems.
2. He stands up for his subordinates even though it makes him unpopular.
3. He assigns people under him to particular tasks.
4. He offers new approaches to problems.
5. He acts without consulting his subordinates first.
6. He asks slow working subordinates to work harder.
7. He lets others do their work the way they think best.
8. He does personal favours for subordinates under him.
9. He is willing to make changes.
10. He rules with an iron hand.
11. He gets the approval of his subordinates on important matters before going ahead.
12. He insists that his subordinates follow standard ways of doing things in every detail.
13. He criticizes poor work.
14. He "needles" subordinates under him for greater effort.
15. He is easy to understand.
16. He resists changes in ways of doing things.
17. He is friendly and can be easily approached.
18. He sees to it that people under him are working up to their limits.
19. He decides in detail what shall be done and how it shall be done.
20. He treats all his subordinates as equals.
21. He refuses to explain his actions.
22. He tries to keep his subordinates in good standing with higher authority.
23. He refuses to give in when people disagree with him.
24. He encourages overtime work.
25. He tries out new ideas.

26. He emphasizes the quantity of work.
27. He changes the duties of people under him without first talking it over with them.
28. He sees that a subordinate is rewarded for a job well done.
29. He encourages slow moving subordinates to greater efforts.
30. He waits for his subordinates to push new ideas before he does.
31. He emphasizes meeting of deadlines.
32. He insists that everything be done his way.
33. He stresses the importance of high morale among those under him.
34. He puts suggestions that are made by subordinates into operation.
35. He backs up his subordinates in their actions.
36. He asks for sacrifices from his subordinates for the entire department.
37. He rejects suggests for changes.
38. He insists that he be informed on decisions made by subordinates under him.
39. He stresses being ahead of competing work groups.
40. He makes those under him feel at ease when talking to him.
41. He criticizes his subordinates in front of others.
42. He demands more than we can do.
43. He expresses appreciation when one of us does a good job.
44. He "rides" the subordinate who makes a mistake.
45. He talks about how much should be done.
46. He treats people under him without considering their feelings.
47. He is slow to accept new ideas.
48. He criticizes a specific act rather than a specific individual.

SCRIPTS FOR THE MANIPULATIONS OF LEADER BEHAVIOUR

INITIATING-STRUCTURE : LOW

As you know, the methods man has been here timing you on your jobs. It seems you should be producing more than you are at present. Now I don't intend to push you to work as hard as you can, or set you production targets which you have to meet or else. I don't see any point in forcing you to spend all your time worrying about how many you've assembled in the last hour. You do the job your way, and as long as you aren't producing a lot less than the other teams I'm not going to worry about it. Even the slowest of you can pay his way without me cracking my whip. However, now that the methods department have these figures, I think we're going to have to do something about the level of output.

Perhaps it will be enough to produce as much as the other teams on this job. Whatever happens, you're not going to be asked to make great sacrifices in order to meet departmental targets.

INITIATING-STRUCTURE : HIGH

As you know, the methods man has been here timing you on your jobs. I can only conclude from the figures he gave me that you aren't producing nearly as much as you should. Since it's my job, I must see that you do. It seems that if each of you just worked your best position, you could increase your output by as much as 20 per cent.

Now that the methods department has this information, I'm afraid I just can't go on letting you do your work the way you want to. You will have to work to standard operating procedures from now on in order to get your output up. A few sacrifices by you could enable the department to meet its deadlines. With a little effort, you could

be the highest producing team in the department, and I want to see that you are. Whatever your limits, I want to see you working to them.

So, let me make it absolutely clear, my first objective is to make sure your output increases. This will require greater effort on your part, and some changes in your method of work.

CONSIDERATION : LOW

I can't say I particularly want to change your method of working, however, it seems I must. After I've thought on it, I'll tell you what sort of changes to make. I shall of course expect you to carry out whatever changes I regard as necessary, whether you agree with them or not. Since I don't see why I should explain the reasons for my decisions you needn't bother to ask. There's no reason why you should need to like or agree with them.

Let me remind you that if it was up to me you wouldn't have to change your work methods. I don't like change. Anyhow, I'll let you know what I decide needs to be done and, as I said, you'll have to live with it whether you like it or not. Just for the record though, have you any suggestions?

CONSIDERATION : HIGH

As you know I've nothing against change. The question is what changes can we make that you will be happy with. The last thing I want is for you to feel that you have no say in how you do your own jobs. I'm certainly not going to force my own ideas of what changes should be made on you. I'd like to hear what suggestions you have to offer before I do anything. If you come-up with the best idea, then thats the one we shall act on.

I'm asking you for your suggestions because it seems to me to be important that an increase in output is not achieved at the expense of feeling hard done by. Its important that you continue to feel reasonably happy with your work and get on well with each other.

Right then, lets get down to working-out what changes could be made that you'll be happy with.

ROLE FOR WALT

You work with Jack and Steve on a job that requires three separate operations. Each of you works on each of the three operations by rotating positions once every hour. This makes the work more interesting, and you can always help out the other fellow by running the job ahead in case one of you doesn't feel so good. It's all right to help out because you get paid on a team piece-rate basis. You could actually earn more if Steve were a faster worker, but he is a swell guy and you would rather have him in the group than someone else who might do a little bit more.

You find all three positions about equally desirable. They are all simple and purely routine. The monotony doesn't bother you much because you can talk, daydream, and change your pace. By working slow for a while and then fast you can set your pace to music you like to yourself. Jack and Steve like the idea of changing jobs, and even though Steve is slow on some positions, the changing around has its good points. You feel you get to a stopping place every time you change positions, and this almost takes the place of a rest pause.

Lately some kind of efficiency expert has been hanging around. He stands some distance away with a stop watch in his hand. The company could get more for its money if it put some of those guys to work. You say to yourself, "I'd like to see one of these guys try and tell me how to do this job. I'd sure give him an earful".

If Gus Thompson, your foreman, doesn't get him out of the shop pretty soon you're going to tell him what you think of his dragging in company spies.

ROLE FOR STEVE

You work with Jack and Walt on an assembly job and get paid on a team piece-rate basis. The three of you work very well together and make a pretty good wage. Jack and Walt like to make a little more than you think is necessary, but you go along with them and work as hard as you can so as to keep the production up where they want it. They are good fellows; they often help you out if you fall behind, and so you feel it is only fair to try to go along with the pace they set.

The three of you exchange positions every hour. In this way you get to work all positions. You like the No. 2 position the best because it is easier. When you get in the No. 3 position you can't keep up. Sometimes Walt and Jack slow down for you.

Lately the methods man has been hanging around watching the job. You wonder what he is up to. Can't they leave guys alone who are doing all right?

ROLE FOR JACK

You are one of three men on an assembly operation. Walt and Steve are your team mates, and you enjoy working with them. You get paid on a team basis, and you are making wages that are entirely satisfactory. Steve isn't quite as fast as Walt and you, but when you feel he is holding things up too much each of you can help out.

The work is monotonous. The saving thing about it is that every hour you all change positions. In this way you get to do all three operations. You are best on the No. 1 position, so that when you get in that spot you turn out some extra work and so make the job easier for Steve, who follows you in that position.

You have been on this job for two years and have never run out of work. Apparently your group can make pretty good pay without running yourself out of a job. Lately, however, the company has had some of its experts hanging around. It looks like the company is trying to work out some speed-up methods. If they make these jobs any simpler you won't be able to stand the monotony.

University of Warwick
Department of Psychology
Attitude Survey

This is not a test. There are no right or wrong answers.
We would like you to describe the way you see a number of people.
These people are listed on the separate piece of PINK paper.
Examine this list and write in the initials of the person you are
going to describe.
Place the Pink paper list against each of the scales, starting below
with Leader - Follower.
There are ten scales set out on the following pages. Please do not
miss any.
When you have placed the Pink paper against the scale, think of how
each person appears to you, using the WORDS on the scale, then give
each person a score which best represents your view of that person.
For example, on the first scale below we ask you to describe people
as LEADER or FOLLOWER.
If you see a person as being a LEADER your score will be 4 - 5 - 6,
depending on the strength of your feeling. On the other hand if you
see the person as a FOLLOWER your score will be at the opposite end
of the scale 3 - 2 - 1.
DRAW A CIRCLE ROUND THE NUMBER WHICH BEST DESCRIBES YOUR FEELING.
Continue until you have described each of the ten people on the ten
scales.
DO NOT START UNTIL YOU ARE CERTAIN WHAT YOU HAVE TO DO. PLEASE ASK
WE WILL BE PLEASED TO HELP.
If you are quite clear please begin with this first scale:-

Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower
Leader : 6 : 5 : 4 : 3 : 2 : 1 : Follower

If you are in any doubt, please ask before going any further.
If you are quite clear about the way in which we would like your
descriptions please turn to the next page ...

Remember a circle round the number you
choose for each person.

Now describe the people on the Pink paper using this idea:

Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned
Unconcerned : 1 : 2 : 3 : 4 : 5 : 6 : Concerned

Now describe the people on the Pink paper using this idea:

Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt
Tactful : 6 : 5 : 4 : 3 : 2 : 1 : Blunt

Now describe the people on the Pink paper using this idea:

Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 3 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring
Forceful : 6 : 5 : 4 : 3 : 2 : 1 : Retiring

Now describe the people on the Pink paper using this idea:

Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise
Foolish : 1 : 2 : 3 : 4 : 5 : 6 : Wise

Now describe the people on the Pink paper using this idea:

Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest
Dishonest : 1 : 2 : 3 : 4 : 5 : 6 : Honest

Now describe the people on the Pink paper using this idea:

Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised
Painstaking : 6 : 5 : 4 : 3 : 2 : 1 : Disorganised

Remember a circle round the number you choose.

Please turn to the next page

Now describe the people on the Pink paper using this idea:

Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful
Nice : 6 : 5 : 4 : 3 : 2 : 1 : Awful

Now describe the people on the Pink paper using this idea:

Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious
Careless : 1 : 2 : 3 : 4 : 5 : 6 : Cautious

Now describe the people on the Pink paper using this idea:

Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative
Silent : 1 : 2 : 3 : 4 : 5 : 6 : Talkative

THANK YOU

People differ in the ways they think about those with whom they work. This may be important in working with others. Think of the person with whom you can work least well. He may be someone you work with now, or he may be someone you knew in the past.

He does not have to be the person you like least well, but should be the person with whom you had the most difficulty in getting a job done. Describe this person as he appears to you. Please give your immediate first reaction.

EFFICIENT	: : : : : : : : :	INEFFICIENT
	8 7 6 5 4 3 2 1	
UNPLEASANT	: : : : : : : : :	PLEASANT
	1 2 3 4 5 6 7 8	
HELPFUL	: : : : : : : : :	FRUSTRATING
	8 7 6 5 4 3 2 1	
PRODUCTIVE	: : : : : : : : :	UNPRODUCTIVE
	8 7 6 5 4 3 2 1	
UNFRIENDLY	: : : : : : : : :	FRIENDLY
	1 2 3 4 5 6 7 8	
CONSIDERATE	: : : : : : : : :	INCONSIDERATE
	8 7 6 5 4 3 2 1	
ADVENTUROUS	: : : : : : : : :	UNADVENTUROUS
	8 7 6 5 4 3 2 1	
COLD	: : : : : : : : :	WARM
	1 2 3 4 5 6 7 8	
RELIABLE	: : : : : : : : :	UNRELIABLE
	8 7 6 5 4 3 2 1	
AMBITIOUS	: : : : : : : : :	UNAMBITIOUS
	8 7 6 5 4 3 2 1	
GLOOMY	: : : : : : : : :	CHEERFUL
	1 2 3 4 5 6 7 8	
CLOSE	: : : : : : : : :	DISTANT
	8 7 6 5 4 3 2 1	
ENTERPRISING	: : : : : : : : :	UNENTERPRISING
	8 7 6 5 4 3 2 1	
CARELESS	: : : : : : : : :	CAREFUL
	1 2 3 4 5 6 7 8	
OPEN	: : : : : : : : :	GUARDED
	8 7 6 5 4 3 2 1	
INTERESTING	: : : : : : : : :	BORING
	8 7 6 5 4 3 2 1	

People differ in the ways they think about those with whom they work. This may be important in working with others. Think of the person with whom you can work best. He may be someone you work with now, or he may be someone you knew in the past.

He does not have to be the person you like best, but should be the person with whom you have been able to work best. Describe this person as he appears to you. Please give your immediate first reaction.

EFFICIENT	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	INEFFICIENT
UNPLEASANT	: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 :	PLEASANT
HELPFUL	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	FRUSTRATING
PRODUCTIVE	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	UNPRODUCTIVE
UNFRIENDLY	: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 :	FRIENDLY
CONSIDERATE	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	INCONSIDERATE
ADVENTUROUS	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	UNADVENTUROUS
COLD	: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 :	WARM
RELIABLE	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	UNRELIABLE
AMBITIOUS	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	UNAMBITIOUS
GLOOMY	: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 :	CHEERFUL
CLOSE	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	DISTANT
ENTERPRISING	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	UNENTERPRISING
CARELESS	: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 :	CAREFUL
OPEN	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	GUARDED
INTERESTING	: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 :	BORING

APPENDIX D

RESEARCH FINDINGS NOT GIVEN IN THE TEXT

TABLE 68

RAW SCORES : COWORKER SCALES AND COGNITIVE

DIFFERENTIATION : PILOT STUDY

<u>Coworker Scales</u>			<u>MRT</u>	
LPC	MPC	ASO	INTRA	INTER
49	99	14.9	130	115
72	73	10.0	109	123
75	104	11.6	159	86
58	96	14.6	79	101
47	97	14.6	105	100
86	94	10.0	103	131
52	118	19.2	116	109
39	106	16.9	154	97
66	97	11.9	149	97
51	109	15.3	142	131
72	93	8.6	151	149
58	91	12.2	124	106
67	97	10.2	94	102
50	82	12.0	91	76
63	90	13.3	141	136
62	85	14.4	85	81
67	106	13.3	134	76
63	-	-	143	105
26	113	22.4	101	86
80	89	6.7	157	150
N=20	N=19	N=19	N=20	N=20

TABLE 69

PRINCIPLE COMPONENTS ANALYSIS OF THE LPC SCALE:

PILOT STUDY

		COMPONENTS		
		<u>1</u>	<u>2</u>	<u>3</u>
T *	Efficient-Inefficient	.14	.41	.22
M	Unpleasant-Pleasant	- .23	.15	.47
M	Helpful-Frustrating	- .15	.04	- .31
T	Productive-Unproductive	.04	.46	- .04
I	Unfriendly-Friendly	- .36	.02	.15
T	Considerate-Inconsiderate	.10	.31	.25
I	Adventurous-Unadventurous	- .36	.07	- .18
I	Cold-Warm	- .37	.05	.22
T	Reliable-Unreliable	.01	.39	- .26
T	Ambitious-Unambitious	- .03	.35	- .34
I	Gloomy-Cheerful	- .39	- .09	- .14
M	Close-Distant	- .08	.22	.33
M	Enterprising-Unenterprising	- .27	.22	- .05
T	Careless-Careful	.17	.31	- .25
I	Open-Guarded	- .34	- .01	- .27
I	Interesting-Boring	- .34	.07	.06

* indicates the domain to which the item was assigned.

TABLE 70

HIGH AND LOW LPC SCORERS : TOTAL SCORES ON TASK-RELATED
AND INTERPERSONAL-RELATED ITEM SETS : PILOT-STUDY

<u>High LPC Group</u>		<u>Low LPC Group</u>	
<u>Task</u>	<u>Interpers</u>	<u>Task</u>	<u>Interpers</u>
39	31	23	27
34	29	30	13
40	14	17	27
25	32	32	12
23	33	21	17
29	21	26	11
18	29	31	10
28	21	20	14
10	37	14	16
18	26	10	10
N = 10		N = 10	

TABLE 71

STANDARD-DEVIATIONS OF TASK-RELATED AND
INTERPERSONAL-RELATED ITEMS: PILOT-STUDY

<u>Low LPC</u>		<u>High LPC</u>	
Task	Interpers	Task	Interpers
.5	.5	.6	1.2
.5	.5	.8	.8
1.5	1.0	1.4	1.5
1.7	.5	.9	2.1
2.0	1.0	1.9	.5
0.8	1.2	1.2	.8
2.4	1.5	2.0	1.2
1.6	1.9	.5	1.4
2.0	1.0	1.4	1.0
2.8	3.3	1.0	1.0
N = 10		N = 10	

TABLE

PRINCIPAL COMPONENTS ANALYSIS OF THE LPC SCALE:
HIGH, MODERATE AND LOW LEADERS (WITH EXPERIENCE SAMPLE)

	LOW LPC			MOD. LPC			HIGH LPC		
	1	2	3	1	2	3	1	2	3
1. Efficient-Inefficient	.25	.21	.22	.34	.26	.17	.37	.08	.13
2. Pleasant-Unpleasant	-.38	.05	.03	-.39	-.14	-.19	-.25	-.21	.24
3. Helpful-Frustrating	.22	.28	-.11	-.27	.26	.25	.19	.08	-.18
4. Productive-Unproductive	.31	.28	.10	.33	.22	.04	.26	-.38	.17
5. Unfriendly-Friendly	-.35	-.10	.20	-.43	-.02	.21	-.39	-.02	-.07
6. Considerate-Inconsiderate	-.36	.16	.15	-.34	.04	.44	-.12	.10	.52
7. Adventurous-Unadventurous	.09	-.35	-.30	.10	-.32	.35	.25	-.30	-.12
8. Cold-Warm	-.28	-.31	-.09	-.22	-.04	-.55	-.37	-.13	-.07
9. Reliable-Unreliable	-.15	.40	.01	.03	.19	-.35	.17	.37	.07
10. Ambitious-Unambitious	.33	-.18	-.01	.19	-.41	.04	.22	-.05	-.43
11. Gloomy-Cheerful	-.06	-.40	-.45	-.24	-.35	-.12	-.26	-.19	.00
12. Close-Distant	.07	.00	.44	.07	-.23	.06	-.25	.13	-.12
13. Enterprising-Unenterprising	.34	-.19	.02	.25	-.53	.06	.21	-.43	-.20
14. Careless-Careful	.16	.07	.14	-.06	.40	.07	.23	.30	.32
15. Open-Guarded	-.15	-.39	.13	-.01	.21	-.17	-.16	.18	-.37
16. Interesting-Boring	-.04	-.05	-.57	.18	-.06	-.17	-.02	-.44	.29
VARIANCE =	33%	20%	12%	30%	27%	13%	24%	17%	14%
	N=14			N=24			N=10		